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LIVERMORE COMMUNITY GENERAL PLAN
CIRCULATION ELEMENT

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UNIVERSITY OF CALIFORNIA

Prepared for the City of Livermore

April 1989

Revised: August 1991
December 1992
October 1993
July 1996

IN THE CITY COUNCIL OF THE CITY OF LIVERMORE

STATE OF CALIFORNIA

A RESOLUTION AMENDING THE LIVERMORE COMMUNITY GENERAL PLAN
(Circulation Element)

WHEREAS, the Planning Commission of the City of Livermore has initiated amendment of the Livermore Community General Plan by the proposed addition of a Circulation Element; and

WHEREAS, at its meetings of September 13, October 4, October 25, December 6, and December 20, 1988, the Planning Commission held public hearings regarding the amendment, approved an Environmental Impact Report and Statement of Overriding Considerations, and adopted Resolution No. 126-88; and

WHEREAS, the City Council has considered the testimony presented and has reviewed the Planning Commission's recommendation contained in its Resolution 126-88, including the Statement of Overriding Considerations, which are incorporated herein by reference.

NOW, THEREFORE, BE IT RESOLVED by the Livermore City Council that the General Plan is amended by the addition of the Circulation Element, as set forth in Exhibit "A" attached.

BE IT FURTHER RESOLVED that the following sections of the General Plan are hereby deleted as the subject matter contained therein is reflected in the new Circulation Element:

1. Part II (Summary of Basic Determinants), Section G (Transportation - Circulation);

2. Part III (Goals and Policies), Section E (Transportation - Circulation Goals and Policies); and

3. Part IV (Proposals), Section C (Transportation - Circulation Element).

BE IT FURTHER RESOLVED that the Environmental Impact Report and Statement of Overriding Considerations are certified as complete and accurate. The City Clerk is directed to file a Notice of Determination thereof with the Alameda County Clerk.

RESOLUTION NO. 135-89

APPROVED AS TO FORM:

ASSISTANT CITY ATTORNEY

On motion of Councilmember Brown, seconded by Councilmember Wieskamp, the foregoing action was taken at the Council meeting held on February 27, 1989, by the following vote:

AYES: COUNCILMEMBERS Brown, Vargas, Bartoli, Wieskamp and Mayor Turner

NOES: None

ABSENT: None

On Motion of Councilmember Wieskamp, seconded by Councilmember Vargas, the foregoing Resolution was passed and adopted at the Council meeting of April 24, 1989, by the following vote:

AYES: COUNCILMEMBERS Vargas, Brown, Wieskamp, Bartoli & Mayor Turner

NOES: NONE

ABSENT: NONE

MAYOR, CITY OF LIVERMORE, CALIFORNIA

ATTEST:

CITY CLERK

RESOLUTION NO. 135-89

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I. INTRODUCTION

A. PURPOSE AND INTENT

The Circulation Element is one of the seven local general plan elements required by state law (Government Code Section 65302). It has been adopted by the City of Livermore to do the following:

- Identify anticipated circulation needs over the next 20 years as necessary to serve City and adjacent land uses;
- Indicate the general location and extent of existing and proposed circulation routes and facilities necessary to serve those needs;
- Provide a clear indication of related circulation system improvement policies and priorities for use by the City in preparing its capital improvement budgeting programs, and determining appropriate conditions for approval of future development proposals; and
- Establish a policy foundation for transportation improvement funding.

In addition, this Circulation Element has been formulated based on the following fundamental planning considerations:

- its circulation system is a principal determinant of the City's physical development pattern;
- the location, design, and component modes of the City's circulation system have significant implications for community appearance, air quality, noise, vegetation, wildlife, and other environmental factors;
- element policies should relate adequately to the transportation system characteristics and plans of other jurisdictions in the region, including Caltrans, Alameda County, and the cities of Dublin and Pleasanton.

B. CONTENT

To incorporate the objectives and considerations outlined above, this Circulation Element includes the following three sections:

(1) this **introduction**

(2) a **goals, policies, and programs** section addressing the following subcategories:

- general circulation system goals
- roadway system
- pedestrian and bicycle system
- transit system

- transportation systems management (TSM)
- traffic impact funding
- railroad service
- air transportation
- local public utilities and facilities

(3) a **glossary** of terms and abbreviations to assist in understanding the Circulation Element

In addition, three separate documents, a Technical Appendix, a Road System Improvements List, and an EIR, have also been prepared as part of this program. While these associated documents are important to an overall understanding of the Circulation Element formulation process, they are not intended for adoption as official General Plan policy and thus have not been included in this General Plan document. They are available for review at the City of Livermore Public Library and at the Livermore Department of Planning.

The **Technical Appendix** includes a description of the circulation planning determinants which provided the basis for the goals, policies, and programs section of the Circulation Element, and for the existing setting overview provided herein for each transportation subcategory. Circulation planning determinants described in the Technical Appendix include:

- key issues and concerns,
- current and projected land use conditions,
- other land use considerations,
- environmental concerns, and
- the concerns of other jurisdictions.

The Technical Appendix also includes a description of the traffic analysis zones and corresponding dwelling unit and employment projections data used with the City's Traffic Model to forecast future road system conditions and improvement needs.

The **Road System Improvements List** is a list of specific road improvement needs and priorities which is maintained on an ongoing basis by the City to implement the goals and policies of this Circulation Element. The list is maintained for use in citywide roadway improvement scheduling and budgeting.

The **Circulation Element EIR** was circulated for public review and certified by the City Council prior to adoption of this Circulation to:

- inform City decision makers, other responsible agencies, and the public of the environmental consequences of the Circulation Element policies and programs;
- recommend mitigation measures to reduce or avoid significant adverse land use, noise, visual, air quality, municipal service, and other impacts; and
- facilitate consideration and adoption of Circulation Element implementation measures (plan lines, specific street improvement programs, etc.).

C. BACKGROUND

The Livermore Community General Plan was adopted by the City Council on March 8, 1976. The plan included a set of circulation goals, policies, and 1976 by the City's Scenic Route Element, adopted on October 11, 1977, and Bicycle Route and Trailway System Plan, adopted on October 26, 1981.

Since adoption of these General Plan elements, significant changes have occurred in the City of Livermore and the Tri-Valley Area. The region has experienced an influx of new residents in addition to the natural growth of its existing population. There has been substantial suburban residential expansion and major employment development in the region. In response to related local changes, the City's 1976 circulation provisions have been amended numerous times; the most recent amendment was approved in March 1988.

The City's population is expected to increase 17 percent by the year 1995, and 45 percent by the year 2005.[1] If these projections prove to be true, Livermore could be expected to contain an estimated 7.5 percent of the total 1987-to-2005 county population growth, and 30 percent of the total Livermore-Amador Valley growth. At least 9,258 new dwelling units have been estimated to be required in the City by the year 2005 to accommodate the projected population growth.[2]

Further, the **3 percent** average projected growth rate land use assumptions used as the basis for projecting future traffic volumes on local roadways (refer to the Technical Appendix) show that roughly 18,800 new dwelling units are expected in the City by the year 2010. Correspondingly, the City's population is expected to increase by 97 percent or 52,600 people by year 2010.[3]

Additionally, based on Association of Bay Area Governments projections, total employment in the City is expected to increase by 56 percent by the year 1995, and by 116 percent by the year 2005, accounting for 40 percent of the total employment in the Valley by the year 2005.

These population and employment growth trends are visibly evident in the increased rate of construction and real estate sales occurring throughout the City. These trends are also reflected in increased traffic volumes on local streets and Interstate 580, and corresponding increases in congestion and traffic delays. These ongoing urban changes will place increasing demands on the Livermore circulation system, and will require a responsive set of City transportation goals, policies, and programs.

The Circulation Element is based upon the anticipated pattern and rate of growth in land use as set forth in the Land Use Element and growth management policy components of the current Livermore Community General Plan. The City is currently preparing a land use and circulation study for the area located north of Interstate 580. Due to the size of the area under consideration (over 15,500 acres), the land use considerations of the study have the potential to affect the circulation system throughout the City. The study will include a determination of the circulation needs for the study area and their affect on the rest of the City and Planning Area.

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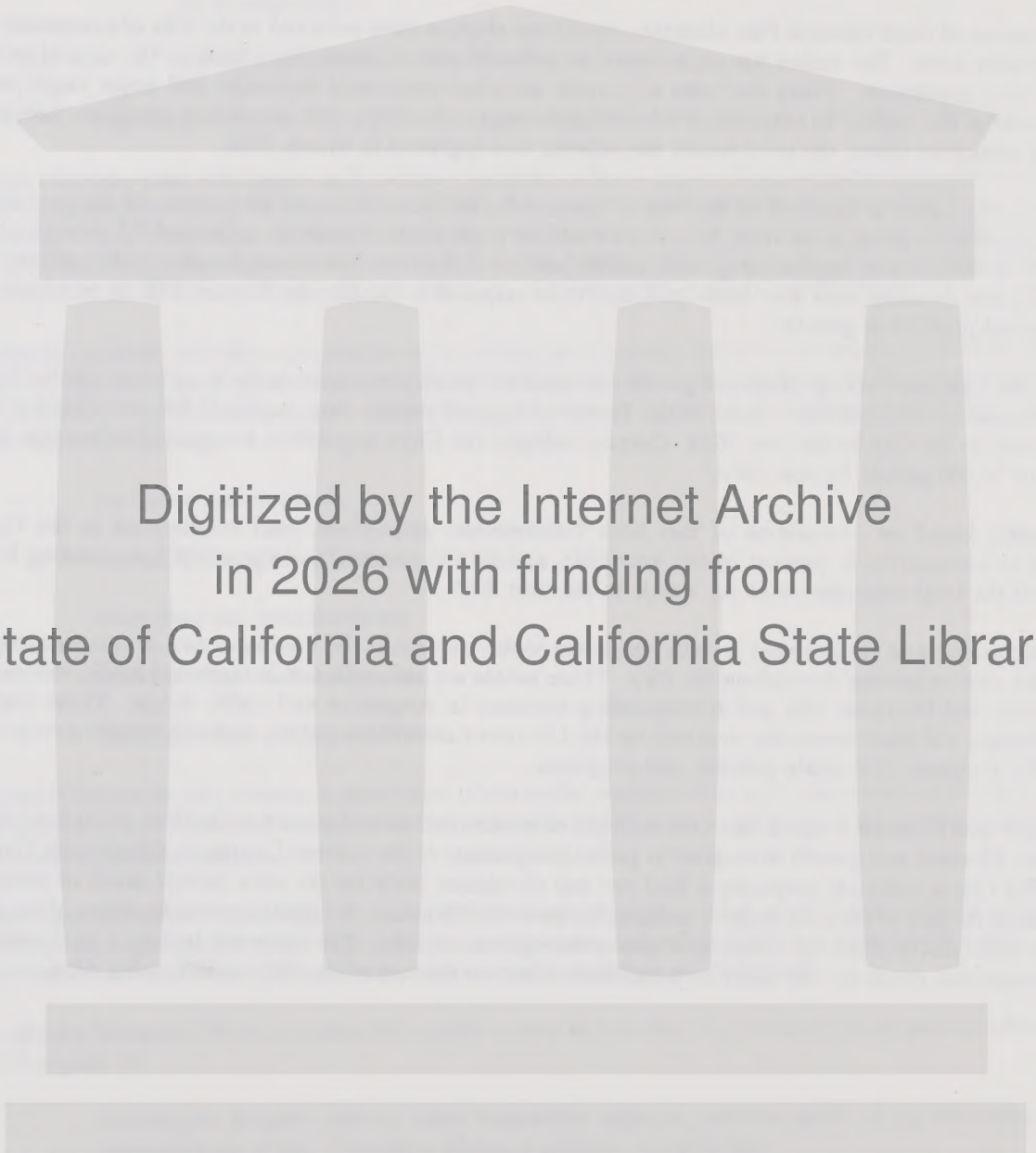
[1]City of Livermore, Northside Area A General Plan Amendment DEIR, July 1987.

[2]Ibid.

[3]Based on a citywide average household size of 2.8 persons per dwelling unit.



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II. GOALS, POLICIES, AND PROGRAMS

This chapter establishes a set of circulation goals, policies, and programs for City implementation. The chapter begins with a listing of general circulation system goals for City-wide application. The goals apply to all aspects of the City's transportation system. The goals section is followed by a number of more specific plan sections describing related City policies and programs for roads, pedestrian and bicycle facilities, transit, transportation systems management (TSM), traffic impact mitigation funding, rail service, air transportation, and public utilities.

A. GENERAL CIRCULATION SYSTEM GOALS

The circulation system objectives of the City of Livermore are embodied in ten goals. City policies and programs related to roads, pedestrian and bicycle facilities, transit, transportation systems management (TSM), traffic impact mitigation funding, rail service, and air transportation are all directed to these overall goals. The ten goals are:

1. *Develop and manage a local roadway system which provides for the safe and convenient movement of vehicular traffic, accommodates future growth consistent with the Land Use Element, and provides acceptable levels of service.*

2. *Plan local circulation system improvements with adequate consideration of their effects on existing land uses and the future land use pattern.*

3. *Base annual capital improvement programming in Livermore on the improvement priorities established in this Circulation Element.*

4. *Adopt policies and programs which will serve to reduce total vehicular miles travelled in Livermore, including the development and improvement of alternative transportation modes (walking, bicycling, and transit use) and the reduction in trip distances (land use considerations).*

5. *Base City circulation policies and improvement programs on a goal to maintain a peak-hour volume/capacity ratio not higher than 0.85 for major intersections in the City.*

6. *Emphasize in local circulation planning the need to minimize adverse environmental impacts and protect neighborhood quality.*

7. *Reduce truck and through-traffic in the central area.*

8. *Establish a program to finance transportation system improvements and traffic impact mitigations with minimal impact on current residents and businesses.*

9. *Require new development to mitigate the traffic and circulation impacts it is creating in accordance with the transportation improvement needs described in this Circulation Element.*

10. *To the extent possible, relate Livermore transportation policies and programs to the transportation system characteristics and goals of other jurisdictions in the region, including the cities of Dublin and Pleasanton, the County of Alameda, the Metropolitan Transportation Commission, Caltrans, and the Bay Area Rapid Transit District.*

B. ROADWAY SYSTEM

1. Existing Roadway Conditions

a. Local Road Network. Figure 1 shows the existing Livermore network of major roadways. The City is served by a system of freeway, highway, major streets, collectors, and local roads.

Regional access is provided by one freeway, U.S. Interstate 580, and one highway, State Route 84. I-580 is an eight-lane freeway which runs east- west from Interstate 5 near Tracy to Interstate 80 in Emeryville. There are six I-580 Livermore interchanges: Kitty Hawk Road/Airway Boulevard, Portola Avenue, North Livermore Avenue, 1st Street-Springtown Boulevard, Vasco Road, and Greenville Road.

State Route 84 is a two-lane state highway which connects I-580 and Livermore to Highway 1 near San Gregorio in San Mateo County. As shown on Figure 1, the City's 1st Street/I-580 interchange is currently the northern terminus of SR 84. The highway follows 1st Street to Holmes Street, and Holmes to East Vallecitos Road.

There are six primary north-south arterials in Livermore leading to the six existing interchanges with Interstate 580: Kitty Hawk Road/Airway Boulevard, Murrieta Boulevard, Livermore Avenue, 1st Street-Springtown Boulevard, Vasco Road, and Greenville Road. Kitty Hawk Road/Airway Boulevard, and Greenville Road are currently two-lane roads; Murrieta Boulevard is a four-lane road; and Livermore Avenue, First Street, and Vasco Road vary from four lanes to two lanes. In addition, there are other north-south major and collector streets providing access within the southern part of the City which do not directly intersect the freeway. These routes include Holmes Street, North P Street, L Street-Arroyo Road, and Murdell Lane.

Existing east-west major streets are Portola Avenue, Stanley Boulevard, Concannon Boulevard, East Avenue, Las Positas Boulevard, Patterson Pass Road, and Scenic Avenue. All of these major streets have four lanes on all or part of their length except Scenic Avenue, which has two lanes.

b. Subregional Road System Network. The Livermore road system also includes a number of routes which are components of a subregional road network. As shown on Figure 2, a system of existing and planned major streets and subregional routes link Livermore with such Tri-Valley locations as Scotts Corner (Vallecitos), Pleasanton, Dublin, the Tassajara and Dougherty valleys, San Ramon, Danville, and Sycamore Valley, as well as such east Contra Costa County locations as Brentwood and Pittsburg-Antioch. Increasingly, such routes will provide needed alternatives to freeway travel.

Realization of many of these subregional links will require coordinated, inter-jurisdictional road planning. In particular, completion of the following routes will require cooperation between the City, Alameda County, Contra Costa County, and the cities of Dublin and Pleasanton:

- Stanley Boulevard widenings between Livermore and Pleasanton,
- a Las Positas Boulevard-Stoneridge Drive connection between Livermore and Pleasanton,
- a North Canyons Parkway-Dublin Boulevard connection between Livermore and Dublin,
- improvements to Vasco Road north of North Canyons Parkway, and
- possible connections between Doolan Road, Dougherty Road, and Fallon Road, interconnecting Livermore with the Dublin Ranch, Tassajara Valley, Dougherty Valley, Sycamore Valley, and Danville areas.

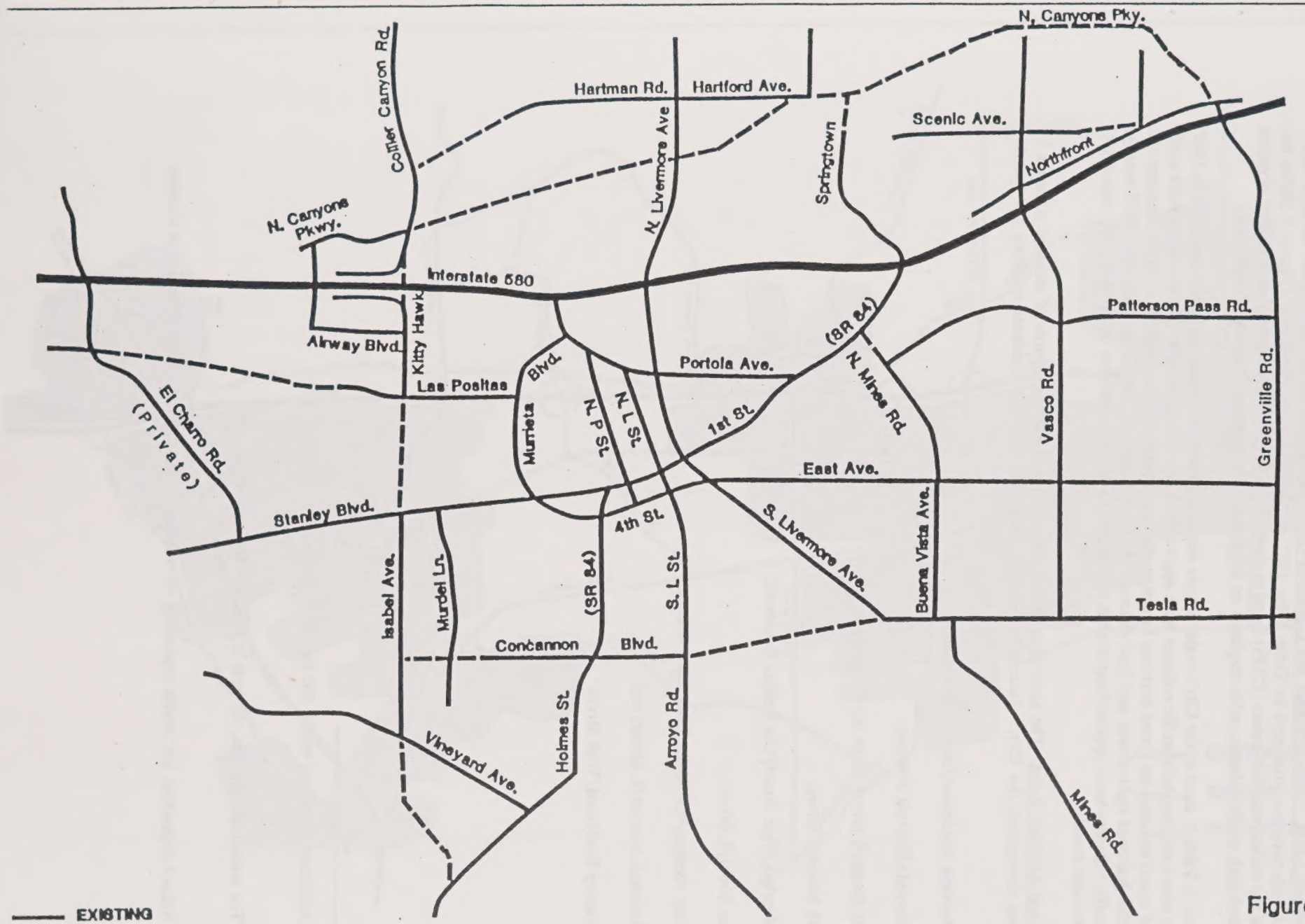

Figure 1

Existing Major Roadway System

c. Existing Local Traffic Volumes and Capacities--1987. Average daily traffic volumes on local major streets and collectors are presented in Table 1 for 1987 along with design capacities. Figure 3 shows the locations of the critical roadside points (CRPs) listed in the table. Critical roadside points were located at points of anticipated high traffic volumes, with emphasis on road segments adjacent to sensitive land uses.

As indicated in Table 1, most of the City's major streets were operating well within their lane capacities in 1987. Exceptions where existing daily traffic volumes were approaching the normal capacity of the existing road width (number of lanes) included 1st Street between Interstate 580 and Portola Avenue, and Vasco Road between the Union Pacific Railroad right-of-way and East Avenue. At these locations, Table 1 indicates that 1987 average weekday traffic volumes were approaching what is considered to be the maximum acceptable daily capacity of a major two-lane street.

d. Local Accident Rates. The Livermore Police Department maintains records of accident statistics for intersections throughout the City.[1] Intersections which have recorded five accidents or more per quarter[2] included:

- Murrieta Boulevard/Stanley Boulevard;
- Murrieta/Portola Avenue;
- 1st Street/S Street (near the SR 84 junction);
- 4th Street/I Street;
- Murrieta/Pine Street/Las Positas Boulevard;
- 1st Street/L Street;
- East Avenue/4th Street/Livermore Avenue;
- Railroad Avenue/L Street; and
- Stanley Boulevard/Wall Street.[3]

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[1]Accidents occurring within 100 feet from intersection corners.

[2]For statistical purposes, the year is split into four quarters.

[3]School-dependent, i.e., varies depending on whether or not Granada High School is in session.

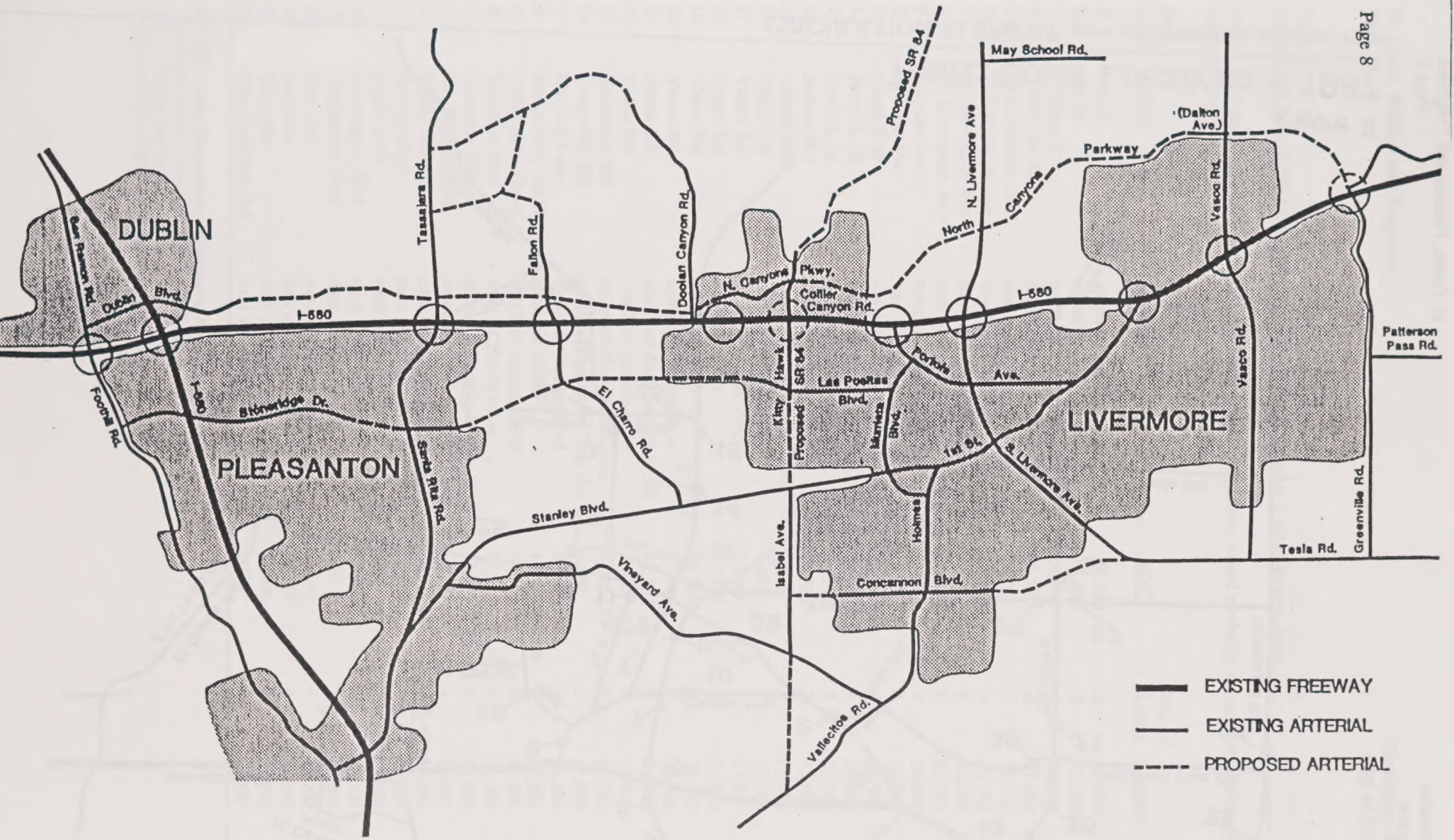

Figure 2

Subregional Road System

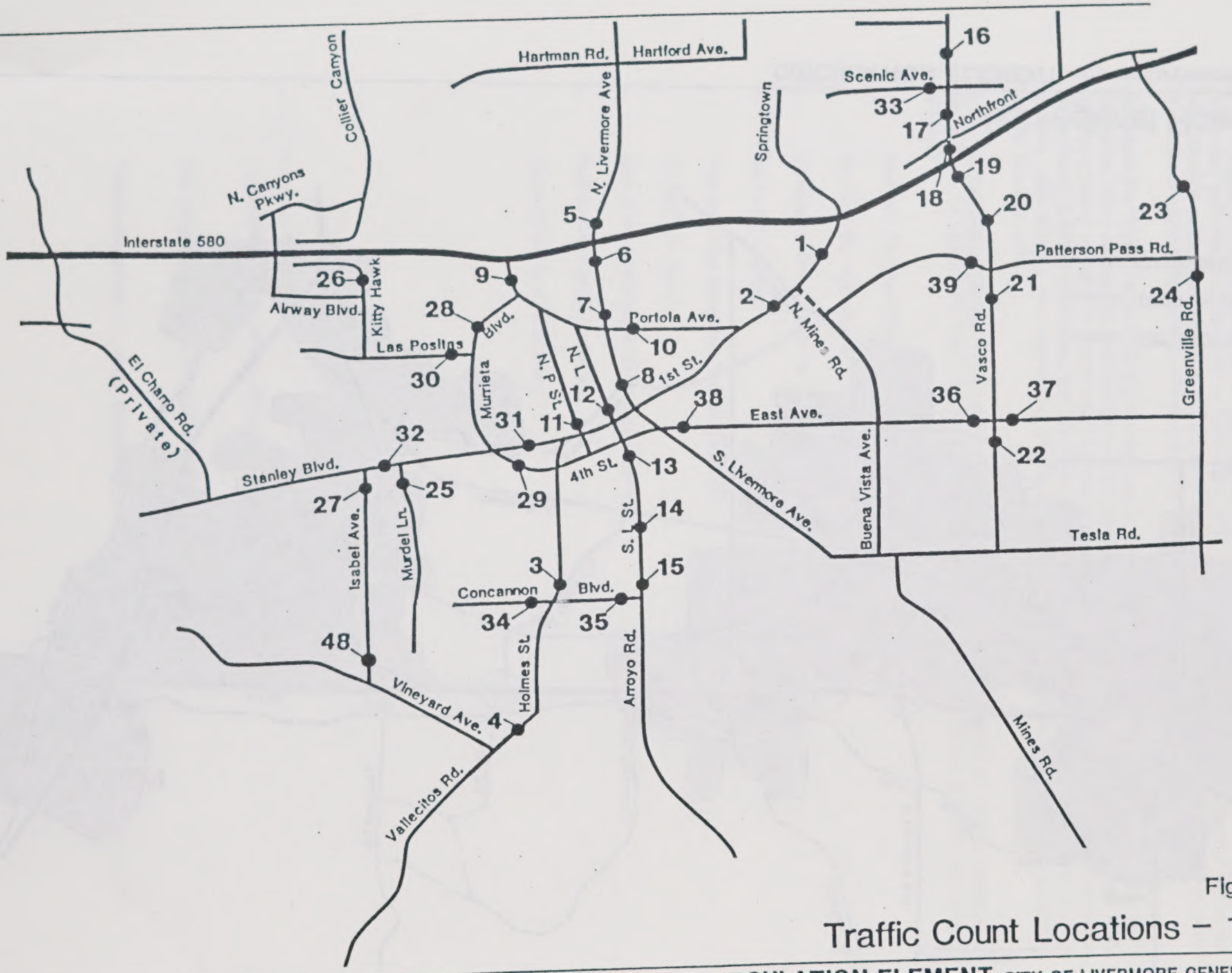

Figure 3

Traffic Count Locations – 1987

Table 1
EXISTING DAILY TRAFFIC VOLUMES AND ROADWAY CAPACITIES--1987

Note: ***Bold italic*** type indicates road segments where congestion would probably occur unless mitigations are implemented.

Link Code[a]	Street	Location	ADT[b]	No. of Lanes	Capacity[c]
1	***1st St***	***south of I-580***	***19,100***	***2***	***20,000***
2	***1st St***	***north of Portola Ave***	***19,000***	***2***	***20,000***
3	Holmes St	north of Concannon Blvd	18,990	4	30,000
4	Vallecitos Rd	north of Vineyard Ave	10,100	2	17,500
5	N Livermore Ave	north of I-580	1,236	2	12,500
6	N Livermore Ave	south of I-580	16,170	4	30,000
7	N Livermore Ave	north of Portola Ave	10,500	4	30,000
8	N. Livermore Ave	north of 1st St	11,280	3	22,500
9	Portola Ave	north of Murrieta Blvd	11,510	4	30,000
10	Portola Ave	east of N Livermore Ave	4,250	4	30,000
11	North P St	north of Railroad Ave	7,816	4	30,000
12	North L St	north of Railroad Ave	8,602	4	25,000
13	South L St	north of College Ave	7,139	2	17,500
14	Arroyo Rd	south of College Ave	10,490	2	17,500
15	Arroyo Rd	north of Concannon Blvd	5,530	2	17,500
16	Vasco Rd	south of Dalton Ave	7,023	2	17,500
17	Vasco Rd	south of Scenic Ave	8,760	2	17,500
18	Vasco Rd	north of I-580	11,310	2	17,500
19	Vasco Rd	south of I-580	18,760	3	30,000
20	Vasco Rd	south of Preston Ave	17,540	4	30,000
21	***Vasco Rd***	***south of Patterson Pass Rd***	***15,930***	***2***	***17,500***
22	Vasco Rd	south of East Ave	5,400	2	17,500
23	Greenville Rd	north of Hawthorne Ave	4,500	2	17,500
24	Greenville Rd	south of Patterson Pass Rd	4,500	2	17,500
25	Murdell Lane	south of Stanley Blvd	4,136	2	12,500
26	Isabel-Kitty Hawk	south of I-580	1,240	2	12,500
27	Isabel-Kitty Hawk	south of Stanley Blvd	1,070	2	12,500
28	Murrieta Blvd	west of Portola Ave	11,510	4	30,000
29	Murrieta Blvd	south of Stanley Blvd	11,425	4	30,000
30	Las Positas Blvd	west of Murrieta Blvd	4,570	4	25,000
31	Stanley Blvd	east of Murrieta Blvd	17,972	4	30,000
32	Stanley Blvd	east of Isabel Ave	14,290	4	30,000
33	Scenic Ave	west of Vasco Rd	920	2	10,000
34	Concannon Blvd	west of Holmes St	5,480	4	30,000
35	Concannon Blvd	west of Arroyo Rd	350	2	12,500
36	East Ave	west of Vasco Rd	15,690	4	25,000
37	East Ave	east of Vasco Rd	14,313	4	25,000
38	East Ave	east of S Livermore Ave	10,000	4	25,000
39	Patterson Pass Rd	west of Vasco Rd	2,270	4	30,000

SOURCE: TJKM Transportation Consultants, November 1987.
[a]Code number refers to locations indicated on Figure 3.
[b]ADT = average daily trips
[c]Roadway capacity is based on the number of lanes.

e. I-580 Freeway and Local Interchanges. Interstate 580 from its existing interchange with Interstate 680 to the Alameda-San Joaquin county line is now an eight-lane divided freeway. Although no precise timetable has been specified, Caltrans intends to eventually widen Interstate 580 to 10 lanes from Vasco Road to the I-680 interchange.[4]

The data in Table 1 indicates that in 1987, the existing local interchange ramps accessing Interstate 580 were operating within capacity. However, examination of peak-hour operations indicates that some ramp volumes were approaching capacity during peak hours, including the Portola Avenue ramps (westbound during the morning peak-hour and eastbound during the evening peak-hour) and the Vasco Road eastbound off-ramp (during the morning peak-hour).

In general, peak-hour ramp operation at 85 percent of capacity is considered the upper limit of acceptable operation.[5] Each of these ramps is estimated to have a maximum capacity of 1,500 vehicles per hour. The westbound ramp at Portola Avenue, which accommodates approximately 1,280 vehicles during the a.m. peak-hour, was operating at 86 percent of capacity in 1987. The eastbound Portola ramp, which accommodates approximately 1,491 vehicles during the p.m. peak-hour, was operating at 99 percent of capacity. The Vasco Road ramp, which accommodates 1,095 vehicles during the a.m. peak-hour, was operating at 73 percent of capacity.

f. State Route 84. Along SR 84 through Livermore (1st Street, Holmes Street, and East Vallecitos Road), most 1987 traffic volumes presented in Table 1 were below roadway capacity. However, along the 1st Street segment of the route, ADT volumes were at 95 percent of the roadway capacity.

There has been ongoing concern in the City regarding the current routing of heavy truck traffic between the freeway and gravel extraction areas in southwest Livermore via the current SR 84 route through residential areas and the downtown. The truck route includes Stanley Boulevard between Isabel Avenue and 1st Street, and 1st Street between Stanley Boulevard and the freeway. The Stanley Boulevard segment between Murdell Lane and Wall Street includes a number of existing homes with rear or side yards contiguous to the south side of the right-of-way.[6] The 1st Street segment includes the main street through downtown.

The City's 1976 Circulation Element assigned "high priority to the joint city-county effort to acquire the remaining required right-of-way for the relocation of State Highway 84 from Holmes Street to a new Isabel Avenue alignment to I-580."

A "Route Concept Report" for SR 84, approved by Caltrans in 1986, outlines the state's long-range 1985-2005 plan to reconstruct and extend SR 84 as necessary to provide for growing volumes of commute and recreational traffic between Brentwood in Contra Costa County and the Pacific coast (San Gregorio) in San Mateo County. Part of the Caltrans concept is to reconstruct the SR 84 segment between I-680 at Scotts Corner and I-580 at Livermore to six-lane freeway status. In addition, the development concept calls for an eventual extension of this SR 84 freeway at four-to-six lanes from Livermore to Brentwood.

The City, in conjunction with Caltrans and the Alameda County Transportation Authority (ACTA) is proceeding

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[4]Caltrans District 4, Route Concept Report, Route I-580, May 7, 1985.

[5]TJKM Transportation Consultants.

[6]Based on 1984 aerial photography.

with plans to improve Isabel parkway between Concannon Boulevard and Jack London Boulevard to implement the initial phase of the Alameda County Measure B Route 84 improvements. Routing for the north I-580/Brentwood connection has not been determined by Caltrans.[7]

The alignment of SR 84 north of Interstate 580 is a significant regional concern. The eventual alignment of SR 84 will be dependent in part upon the alignment of the northern portion of Vasco Road. The alignment for the relocation of Vasco Road has been identified and adopted by Contra Costa County and Alameda County.

The SR 84 alignment south of I-580 preferred by the City is described in this Circulation Element. The configuration of SR 84 preferred by the City is an expressway rather than a freeway configuration. If necessary, this Circulation Element will be amended after a decision is reached regarding a final configuration and alignment. Until the SR 84 improvements are completed south of I-580, the highway will continue to follow the existing 1st Street-Holmes Street-Vallecitos Road alignment. Nevertheless, the traffic modeling completed in preparation of this Circulation Element was based on an assumption that the planned reconstruction of SR 84 segment south I-580 will have been completed by 2010.[8]

In addition, the City's preferred location for the SR 84/I-580 interchange is indicated in this Circulation Element. The City is conducting a study which examines two alternative locations for the extension of Isabel parkway and the interchange. Under the "Kitty Hawk" alignment, Isabel Parkway would generally follow Kitty Hawk Road to I-580, continue north along Collier Canyon Road, then veer northeast, north of Las Positas College. This alternative may require closing or relocation of the Airway Boulevard interchange due to Caltrans and Federal Highway Administration spacing requirements. Under the "Chabot" alignment, the roadway and interchange would be located farther to the east and the roadway would be located east of the college. This alternative may require closing of the Portola Avenue interchange due to spacing requirements. The North Livermore General Plan Amendment and the Circulation Element include the "Chabot" alignment.[9]

g. Previous Road Extension Plans. In addition to the SR 84 realignment, other principal road extension proposals in the City's 1976 Circulation Element also remain uncompleted. These include extensions of Concannon Boulevard, North Mines Road, Patterson Pass Road, Las Positas Boulevard, North Canyons Parkway, and Las Positas Road-Naylor Avenue-Vaughn Avenue. These major street extensions were recommended in the 1976 plan to facilitate through traffic movements and to implement the 1976 General Plan objective of reducing through traffic on minor (neighborhood) streets. The City's current position on each of these road extensions is clarified in this 1988 Circulation Element.

2. Projected Roadway Conditions

a. Projected 2010 Volumes and Capacities. Projected future volumes in the year 2010 were analyzed using the TJKM traffic model for Livermore, and assuming a residential growth rate of 3 percent. The model projections were based on the land uses designated on the Livermore Community General Plan map and on the roadway network set forth in this Circulation Element. The projected future traffic volumes are presented in Table 2 by road link code for critical roadside points (CRPs). Figure 4 shows the locations of the CRPs listed on Table 2. Road links shown on Figure 4, but not included on Figure 3 are new road extensions anticipated

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[7]Caltrans, Route Concept Report, Route 84, July 22, 1985.

[8]Refer to Table 1.

[9]City of Livermore, North Livermore General Plan Amendment, September 1993.

after 1987.

In evaluating future conditions, the following post-1988 improvements were assumed to have been completed by the year 2010: the North Mines Road extension between First Street and East Avenue with a grade separation over the UP right-of-way; the extension of Concannon Boulevard to the west to intersect Isabel Avenue and to the east to intersect Livermore Avenue; and, the extension of Kitty Hawk Road between Las Positas Boulevard and Stanley Boulevard. All of these extensions were proposed in the 1976 Circulation Element. In addition, the following changes were also assumed to have occurred by 2010: the extension of North Canyons Parkway westerly from Northfront Road to North Livermore Avenue via the Dalton Avenue/Hartford Road alignment, the rerouting of SR 84 to follow Isabel Parkway south of Interstate 580, the upgrading of SR 84 from Interstate 680 in Fremont to Interstate 580 in Livermore to six full lanes, and the extension of Isabel Parkway north of Interstate 580 to intersect Vasco Road north of Dalton Avenue.

Tables 3 and 4 indicate warranted roadway improvements by the year 2010 and buildout, respectively. Warranted improvements are those improvements that must be implemented by the times indicated to avoid congestion on the roadway system. The Road System Improvement List indicates the City's priorities for roadway improvements. The priorities are based not only on warranted improvements, but also the City's goal to provide a safe, convenient and efficient transportation system for the Livermore area.

b. Improvements Needed by 2010. Road segments requiring improvement are shown on Table 2 in bold type. Improvements are needed when projected traffic volumes are within 85 percent of the current road capacity.
Improvements needed by the year 2010 are listed in Table 3. Indicated improvement needs by the year 2010 include:

1st Street: The existing two-lane section would need to be widened to six lanes between Interstate 580 and Portola Avenue.

Greenville Road: The existing two-lane section would need to be widened to four lanes between Northfront Road and Patterson Pass Road.

North Livermore Avenue: North Livermore Avenue north of Interstate 580 would need to be widened from two lanes to four to six lanes to Isabel Parkway. Anticipated year 2010 traffic volumes would also warrant improvement of North Livermore Avenue from four to six lanes between I-580 and Portola Avenue. The portion of North Livermore Avenue between I-580 and Las Positas Road shall initially be widened to accommodate 6 lanes with a potential ultimate configuration of 8 lanes. Options for reducing the need for the 8-lane segment, such as an additional parallel facility, shall be identified when the City completes the Project Study Report for the North Livermore interchange.[10]

Stanley Boulevard: Widen from four to six lanes east between Isabel Parkway and Murrieta Boulevard.

East Vallecitos Road: Widen from two to four lanes north of Vineyard Avenue.

East Avenue: Upgrade to a four-lane facility west of Vasco Road with left-turn lanes.

Concannon Boulevard: Four lanes would be needed between Isabel Avenue and Arroyo Road. Those portions east of Arroyo Road shall be two lanes. Concannon Boulevard through developed areas east of Arroyo Road shall be two lanes within a four lane right-of-way.

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[10]City of Livermore, North Livermore General Plan Amendment EIR, September 1993.

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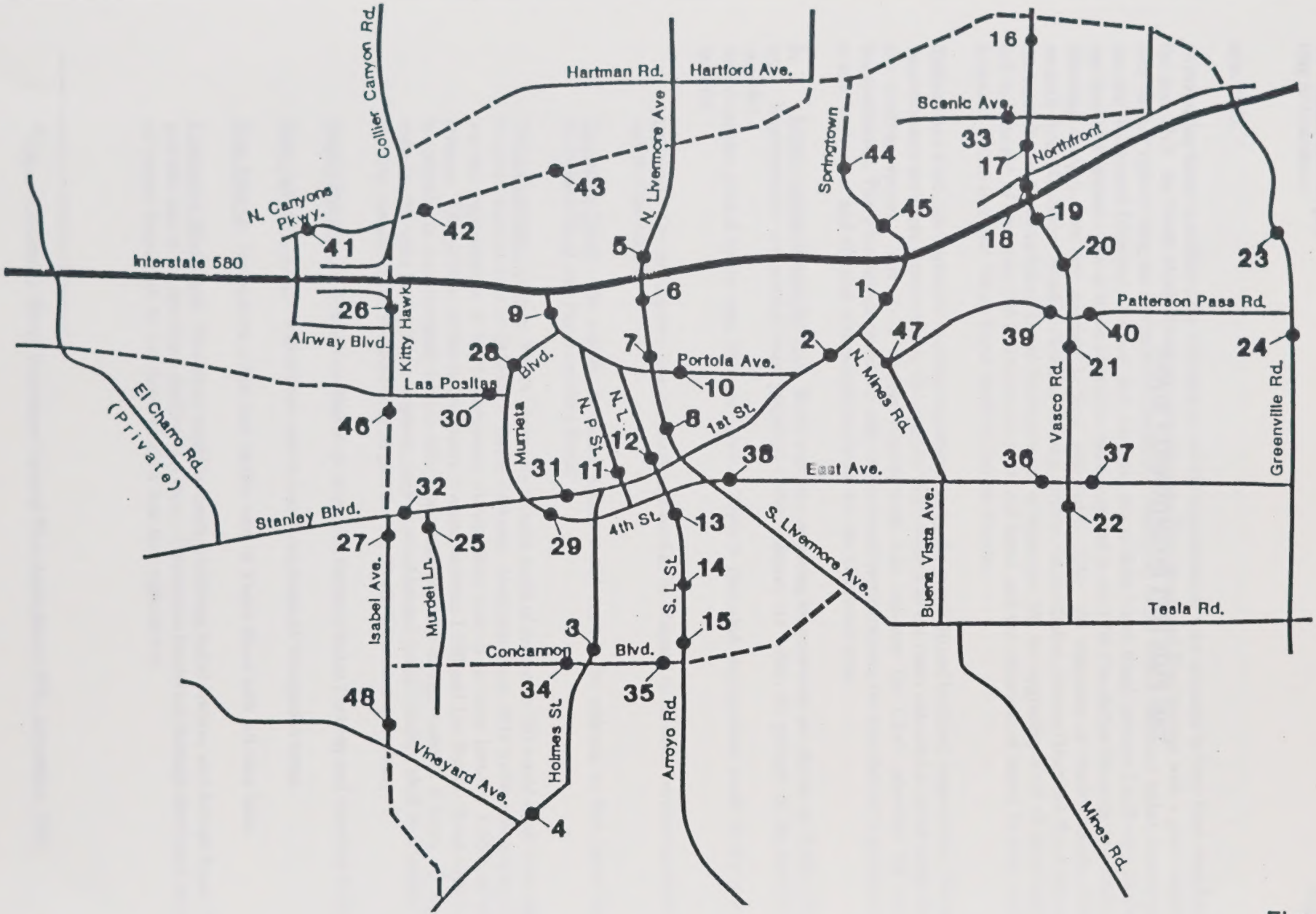

Figure 4

Traffic Count Locations – 2010 and Buildout

Table 2

DAILY TRAFFIC VOLUMES AND ROADWAY CAPACITIES – 1987, 2010 and Buildout[a]

Note: Bold type indicates road segments where congestion would probably occur unless mitigations are implemented.

Link Code[b]	Street	Location		Existing Volumes and Capacities			Projected ADT[c] Volumes	
				ADT[c]	No. of Lanes[d]	Capacity[e]	2010	Buildout
1	1st St	south of	I-580	19,100	2	20,000	41,400	42,800
2	1st St	north of	Portola Ave	19,000	2	20,000	39,500	43,100
3	Holmes St	north of	Concannon Blvd	18,990	4	30,000	17,100	17,200
4	Vallecitos Rd	north of	Vineyard Ave	10,100	2	17,500	14,100	16,000
5	North Livermore Ave	north of	I-580	1,236	2	12,500	22,300	27,100
6	North Livermore Ave	south of	I-580	16,170	4	30,000	22,400	27,500
7	North Livermore Ave	north of	Portola Ave	10,500	4	30,000	21,400	26,800
8	North Livermore Ave	north of	1st St	11,280	3	22,500	22,300	25,500
9	Portola Ave	north of	Murrieta Blvd	11,510	4	30,000	16,200	18,300
10	Portola Ave	east of	North Livermore Ave	4,250	4	30,000	15,700	20,600
11	North P St	north of	Railroad Ave	7,816	4	30,000	12,500	12,800
12	North L St	north of	Railroad Ave	8,602	4	25,000	12,100	13,800
13	South L St	north of	College Ave	7,139	2	17,200	10,800	11,500
14	Arroyo Rd	south of	College Ave	10,490	2	17,500	6,200	11,500
15	Arroyo Rd	north of	Concannon Blvd	5,530	2	17,500	6,200	6,800
16	Vasco Rd	south of	Dalton Ave	7,023	2	17,500	17,800	29,100
17	Vasco Rd	south of	Scenic Ave	8,760	2	17,500	29,200	41,700
18	Vasco Rd	north of	I-580	11,310	2	17,500	41,300	60,600
19	Vasco Rd	south of	I-580	18,760	4	30,000	32,100	51,000
20	Vasco Rd	south of	Preston Ave	17,540	4	30,000	19,400	28,900
21	Vasco Rd	south of	Patterson Pass Rd	15,930	2	17,500	14,800	20,300
22	Vasco Rd	south of	East Ave	5,400	2	17,500	9,300	11,600
23	Greenville Rd	north of	Brisa St	4,500	2	17,500	22,800	41,200
24	Greenville Rd	south of	Patterson Pass Rd	4,500	2	17,500	15,200	21,000
25	Murdell Lane	south of	Stanley Blvd	4,136	2	12,500	5,000	5,000
26	Isabel Parkway	south of	I-580	1,240	2	12,500	51,200	58,800
46	Isabel Parkway	south of	Las Positas Blvd	-----	6*	45,000	37,900	43,900
27	Isabel Parkway	south of	Stanley Blvd	1,070	2	12,500	27,400	31,900
48	Isabel Parkway	north of	Vineyard Ave	-----	6*	45,000	26,500	31,200
47	North Mines Rd	east of	1st St	-----	6*	45,000	29,400	32,000
28	Murrieta Blvd	west of	Portola Ave	11,510	4	30,000	4,200	5,200
29	Murrieta Blvd	south of	Stanley Blvd	11,425	4	30,000	18,400	20,500
30	Las Positas Blvd	west of	Murrieta Blvd	4,570	4	25,000	15,900	17,100
31	Stanley Blvd	east of	Murrieta Blvd	17,972	4	30,000	19,500	21,400
32	Stanley Blvd	east of	Isabel Ave	14,290	4	30,000	31,000	33,100
33	Scenic Ave	west of	Vasco Rd	920	2	10,000	4,800	6,400
34	Concannon Blvd	west of	Holmes St	5,480	4	30,000	4,600	5,400
35	Concannon Blvd	west of	Arroyo Rd	350	2	12,500	10,200	12,300
36	East Ave	west of	Vasco Rd	15,690	4	25,000	18,400	21,700
37	East Ave	east of	Vasco Rd	14,313	4	25,000	17,700	21,900
38	East Ave	east of	South Livermore Ave	10,000	4	25,000	13,100	13,800
39	Patterson Pass Rd	west of	Vasco Rd	2,270	4	30,000	6,800	11,300
40	Patterson Pass Rd	east of	Vasco Rd	-----	4*	30,000	8,900	12,900
41	North Canyons Pkwy	east of	Airway Blvd	-----	4	30,000	15,500	24,400
42	North Canyons Pkwy	east of	Collier Canyon Rd	-----	6*	45,000	27,200	33,500
43	North Canyons Pkwy	east of	Portola Ave	-----	4*	30,000	13,300	16,800
44	Springtown Blvd	north of	Bluebell Dr	-----	4	30,000	7,900	8,500
45	Springtown Blvd	north of	I-580	-----	4	25,000	14,000	14,200

[a] Three percent average annual residential growth rate.

[b] Code numbers refer to locations indicate on Figures 3 and 4.

[c] ADT = average daily trips.

[d] Existing number of lanes in 1987, except for road links identified with an *, which are new post-1988 improvements assumed to have been completed by 2010 (see page 14).

[e] Roadway capacity is based on the number of lanes.

* Post-1988 improvements assumed to have been completed by 2010 (see note [d] above).

Source: TJKM, November 1987 and June 1988

Table 3

WARRANTED YEAR 2010 ROADWAY IMPROVEMENTS

Note: Road links below are locations where the roadway improvements would be warranted due to projected traffic volume increases.

Link Code[a]	Street	Location	2010 ADT[b]	Improvement No. of Lanes	Capacity[c]
1	1st St	south of I-580	41,600	6	45,000
2	1st St	north of Portola Ave	39,500	6	45,000
4	Vallecitos Rd	north of Vineyard Ave	14,100	4	30,000
5	N Livermore Ave	north of I-580	22,300	4	30,000
6	N Livermore Ave	south of I-580	22,400	6	45,000
7	N Livermore Ave	north of Portola Ave	21,400	6	45,000
16	Vasco Rd	south of Dalton Ave	17,800	4	30,000
17	Vasco Rd	south of Scenic Ave	29,200	4	30,000
18	Vasco Rd	north of I-580	41,300	6	45,000
19	Vasco Rd	south of I-580	32,100	6	45,000
23	Greenville Rd	no. of Hawthorne Ave	22,800	4	30,000
24	Greenville Rd	south of Patterson Pass	15,200	2	20,000
26	Isabel Parkway	south of I-580	51,200	6	45,000
46	Isabel Parkway	so. of Las Positas Blvd	37,900	6	45,000
27	Isabel Parkway	south of Stanley Blvd	27,400	6	45,000
48	Isabel Parkway	north of Vineyard Ave	26,500	6	45,000
32	Stanley Blvd	east of Isabel Ave	31,000	6	45,000
35	Concannon Blvd	west of Arroyo Rd	10,200	4	30,000
36	East Ave	west of Vasco Rd	18,400	4	30,000
42	N Canyons Pkwy	e. of Collier Canyon Rd	27,200	4	30,000
43	N Canyons Pkwy	east of Portola Avenue	13,300	2	20,000

SOURCE: TJKM Transportation Consultants, November 1987 and June 1988.

[a]Code numbers refer to locations indicated on Figure 4.
[b]ADT = average daily trips.
[c]Roadway capacity is based on the number of lanes.

Isabel Parkway (SR 84) South of I-580 (Isabel Avenue-Kitty Hawk Road Alignment): The SR 84 realignment is proposed to be constructed as a 6-lane limited access expressway, with a grade-separated intersection with the Stanley Boulevard/railroad right-of-way. The City recognizes that the long-term regional and subregional circulation needs may require upgrading this roadway to freeway status involving interchanges at Las Positas Boulevard, Stanley Boulevard and Concannon Boulevard. The City, in conjunction with Caltrans and the Alameda County Transportation Authority (ACTA), is conducting studies to improve and extend Isabel Avenue between Concannon Boulevard and Jack london Boulevard and to make associated operational improvements between SR 84 and I-580. The purposes of the improvements are to improve local traffic circulation and access in the western part of Livermore and implement the initial phase of Alameda County Measure B Route 84 improvements (200' right-of-way, construction of 2 travel lanes and grade separation at Stanley Boulevard).[11]

Isabel Parkway, North of I-580: This arterial roadway extension north of I-580 is expected to be needed by the year 2010 to accommodate local traffic movement north and south of I-580.

The roadway extension will require 4 to 8 lanes through the planned urban area in North Livermore and 2 lanes between the FCC monitoring station and Greenville Road.

Vasco Road: Operational conditions on Vasco Road immediately north and south of Interstate 580 would be near capacity regardless of the alignment of SR 84 north of the interstate. The existing four-lane sections between Interstate 580 and Preston Avenue need to be widened to six lanes. The existing two-lane section north of Interstate 580 and south of Scenic Avenue also needs to be widened to six lanes. The existing two-lane section north of Scenic Avenue and south of Dalton Avenue would need to be widened to four lanes.

North Canyons Parkway: Six lanes would be needed between Airway Boulevard and Isabel Parkway. At least four lanes would be needed between Isabel Parkway and Portola Avenue.

c. Projected Buildout Volumes and Capacities. Future volumes were also analyzed for buildout of the planning area under current General Plan land use policies, using the TJKM traffic model for Livermore and assuming a residential growth rate of 3 percent. The projected buildout volumes are also listed in Table 2. The locations of the road points listed in the table are shown on Figure 4.

d. Improvements Needed by Buildout. Table 3 indicates that the recommended 2010 improvements to Livermore Avenue, Stanley Boulevard, 1st Street, East Avenue, Greenville Road south of Brisa Street, Concannon Boulevard, and Isabel Parkway north and south of I-580 would also adequately serve buildout traffic volumes. Further, it has been assumed that East Avenue east of Vasco Road will be closed to the public upon request for closure from the Lawrence National Laboratory.

Road segments where additional congestion would probably occur between 2010 and buildout unless improvements were made are identified with bold type on Table 2. The traffic model analysis indicates that improvements to these road segments would be needed unless a significant change in City development policy occurs. Roadway improvements warranted between 2010 and buildout are listed in Table 4. Indicated improvement needs between 2010 and buildout include:

Greenville Road: The four-lane segment north of Brisa Street would require widening to six lanes, and additional improvements to the interchange to reduce congestion on this freeway approach and through-route.

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[11]City of Livermore, Isabel Extension Project Draft EIR, May 1993.

Vasco Road: The four-lane section of Vasco between Scenic Avenue and Dalton would need to be widened to six lanes. Similarly, the four-lane section between Preston Avenue and Brisa Avenue would need to be widened to six lanes. Also, the six-lane segment between Scenic and Preston would require additional improvements to the interchange to reduce congestion. In addition, the two-lane segment of the route between Patterson Pass Road and East Avenue needs widening to four lanes. Again, these road improvement needs would be greater without the North Canyons Parkway connection between Vasco and Greenville.

Scenic Avenue: Scenic Avenue would require improvement to a full- capacity two-lane collector (with left-turn lanes) between Vasco Road and Bluebell Drive, and extension of a two lane collector (with left-turn lanes) between Vasco and Northfront Road.

Table 4

ROADWAY IMPROVEMENTS WARRANTED BETWEEN 2010 AND BUILDOUT

Note: Road links below are locations where the roadway improvements would be warranted due to projected traffic volume increases.

Link Code[a]	Street	Location	Buildout ADT[b]	Improvement No. of Lanes	Improvement Capacity[c]
16	Vasco Rd	south of Dalton Ave	29,100	6	45,000
20	Vasco Rd	south of Preston Ave	28,900	6	45,000
21	Vasco Rd	south of Patterson Pass	20,500	4	30,000
23	Greenville Rd	no. of Hawthorne Ave	41,200	6	45,000
33	Scenic Ave	west of Vasco Rd	6,400	2	20,000

SOURCE: TJKM Transportation Consultants, November 1987 and June 1988.

[a]Code numbers refer to locations indicated on Figure 4.
[b]ADT = average daily trips
[c]Roadway capacity is based on the number of lanes.

3. Roadway System Policies

a. Proposed Roadway System. The existing and officially proposed future local roadway system is mapped on Figure 5, the **Future Roadway Network** map.

A functional roadway classification system has been established and diagrammed on the map. The functional criteria associated with each roadway classification are outlined below. The intent of the classification system is to clarify the local street system, provide a basis for establishing and maintaining road design standards and improvement priorities, and to set policies for adjacent land uses.

*(1) **Freeways**. Freeways are state-designated high-speed, high-capacity routes serving statewide and interregional circulation needs. Direct access shall be limited to highways and major streets only, via freeway interchanges. Major streets shall cross at a different grade level. No direct land service function shall be provided. In urban areas, freeways are typically eight- to ten-lane divided facilities.*

*(2) **Highways**. Highways are state-designated, relatively high-speed, high- capacity routes serving needs for interregional through traffic movement and interconnection between countywide road system components. Highways also connect local major streets with freeway interchanges. Local direct access shall be limited to major streets via signal-controlled intersections. Left turns should be prohibited or highly restricted. Direct land service (driveways, etc.) should also be prohibited. Roadside parking shall be prohibited. In urban areas, highways are typically four- to six-lane divided facilities.*

*(3) **Major Streets**. Major streets are local medium-speed, high-capacity routes for intracity, cross-town travel and local access to freeways, highways, and the subregional road system diagrammed on Figure 2, via interchanges and signal-controlled intersections. Major streets also interconnect collector and local streets via signal and stop-sign controlled intersections, respectively. The frequency of direct access to abutting properties shall be limited to avoid interference with the through traffic function of these routes. Direct access shall be limited to essential driveway locations away from intersections. New single-family homes shall not front on major streets. Strip commercial development should also be avoided to reduce "side friction". Roadside parking should be prohibited. Major streets are typically four- and six-lane divided facilities.*

*(4) **Collector**. Collector streets are relatively low-speed, medium-capacity streets which collect and distribute local traffic moving between local and major streets. Collector routes provide for circulation between neighborhoods, and divert through traffic from local streets. Direct access to abutting properties (driveway spacing) shall be stringently limited. Prohibitions on curbside parking may vary with road widths and traffic conditions. Collector streets are typically two- to four-lane facilities.*

*(5) **Local Streets**. Local streets are low-speed, low-capacity minor streets that provide for circulation within neighborhoods, with direct access to abutting land uses. Street design standards and layouts are typically used to discourage through traffic movements, avoid high travel speeds and volumes, and minimize neighborhood noise and safety impacts. Curbside parking is usually allowable. Local streets are typically two lanes.*

*(6) **Intracounty Routes**. Intracounty routes are medium-speed, low-capacity rural roads on the City's urban fringe which are components of the subregional intercommunity road system diagrammed on Figure 2. These routes are typically maintained at county two-lane rural standards (no curbs or gutters).*

*(7) **Special Rural Routes**. Special rural routes include highways, major streets, and intra-county routes that pass through or by areas designated as having special rural features which warrant incorporation of protection and enhancement measures in the roadway design. Special rural routes are designated through and entering City-identified vineyard lands. These routes should incorporate special road design standards which serve to protect and complement the "wine country" character of these lands, including width restrictions, landscaping features, and special signs. Special rural routes shall be developed at two-lane rural standards (no curbs, gutters or sidewalks)*

but shall include combined bike/pedestrian/equestrian trails.

To protect the rural and agricultural character of the vineyard lands south of the City it is desirable that all roads in this area remain at two lanes. This area is generally defined as the area south of Concannon Boulevard between Isabel Avenue and Arroyo Road, and the area east of Arroyo Road and area south of East Avenue. The roads in this area shall have two paved travel lanes with paved left turn lanes where required. In developed portions of this area, where future traffic volumes may exceed the capacity of a two-lane road, right-of-way for a four-lane road shall be required. The area not used for the two paved lanes shall be landscaped and/or used for appropriate hiking, biking and equestrian trails.

b. Roadway Improvement Policies. The following policies have been adopted by the City to address identified roadway system improvement needs in a manner which is consistent with the ten overall Circulation Element goals (pages 5 and 6). Each policy represents a specific City commitment. All future public and private roadway improvement decisions shall be guided by these policies. Refer to the North Livermore General Plan Amendment for additional goals and policies which support and expand upon the goals and policies of the Circulation Element as needed to clarify the City's desires for the area's local circulation system.

(1) Provide for safe and convenient roadway access to all areas of the City.

(2) Consider the existing and planned land use pattern in Livermore as the principal basis for determining current and future road system improvement needs.

(3) Improve and extend the City's road system to accommodate and facilitate urban expansion at acceptable levels of service, consistent with the Land Use Element and other policies of the General Plan. Condition such improvements and extensions upon developer participation.

(4) Provide for adequate road linkages between north and south Livermore.

(5) Provide north and south Livermore neighborhoods and commercial areas with adequate freeway access.

(6) For the purposes of development associated traffic studies, road improvement design and capital improvement priorities, the City shall consider a peak-hour volume/capacity ratio of .85 for periods of 2 hours or more per average day to be the upper limit of acceptable service at major intersections in Livermore.

(7) The City may temporarily exempt certain street locations from the level of service standards due to special circumstances that make it undesirable or infeasible to provide further capacity improvements at these locations. These special circumstances may include but are not limited to: significant negative fiscal, economic, social or environmental impacts of further construction; a significant portion of the traffic is generated by development outside of the control of the City; and/or the delay in obtaining the needed cooperation of other agencies. The City however will make every effort to design alternative improvements and obtain interjurisdictional cooperation so that these locations can be rapidly removed from the special circumstance list. The City may also require that projects impacting special circumstance locations implement mandatory TSM programs and other measures to reduce their impacts on these locations as much as possible.

(8) Improve traffic flow on the local roadway system to achieve these citywide level of service objectives.

(9) Place highest priority in City annual capital improvement planning and budgeting on feasible improvements to road components where existing traffic flows approach or exceed a peak-hour volume/capacity ratio of 0.85. Urge Caltrans to prioritize local freeway interchange improvements based on this peak-hour volume/capacity standard.

(10) Provide a street system which minimizes traffic on local, minor (non- collector) streets in order to create and preserve a high quality residential environment.

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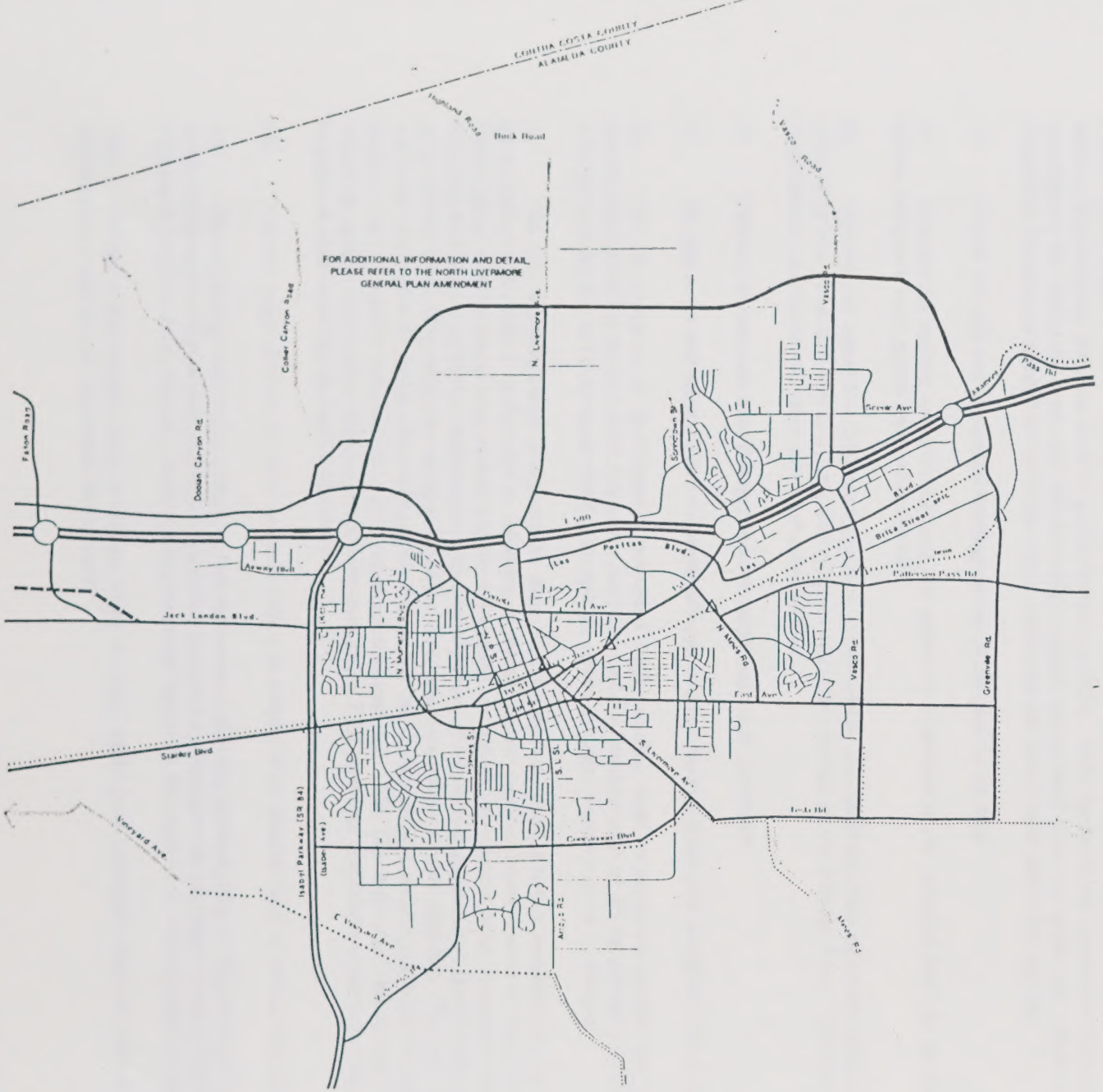


- FREEWAY INTERCHANGE
- FREEWAY
- HIGHWAY
- MAJOR STREET
- COLLECTOR
- LOCAL STREET
- INTRACOUNTY ROUTE
- SPECIAL RURAL ROUTE
- RAILROAD TRACK
- △ GRADE-SEPARATED INTERSECTIONS

Figure 5

FUTURE ROADWAY NETWORK

1/2 0 1 miles

CIRCULATION ELEMENT
CITY OF LIVERMORE GENERAL PLAN

(11) Design local roadway improvements to minimize adverse land use, air quality, noise, community appearance, vegetation and wildlife, drainage, and other environmental impacts. Whenever possible, roadway routing and improvements shall avoid significant impacts to the habitats of rare and endangered species.

(12) Consider public perceptions of the Livermore community, including its overall form, character, and image when deciding upon the precise alignment and design standards to be incorporated in the road system improvements set forth herein.

(13) In designing and considering future improvements to designated special rural roads, i.e., roads which traverse designated vineyard lands, the City shall endeavor to protect and enhance the "wine country" character of the area.

(14) Incorporate special roadway design treatments to define and enhance major City gateways, including Portola Avenue, North Livermore Avenue, Springtown Boulevard, 1st Street, and Vasco Road.

(15) Implement transportation measures which will improve downtown access and environmental quality, with particular emphasis on diverting heavy truck traffic away from the central area.

(16) Base land use decisions upon careful consideration of traffic impacts. Locate high traffic-generating land uses along or close to major streets.

c. Parking Policies. Policies regarding parking in the City include the following:

(1) Require adequate offstreet parking provisions for all development projects through enforcement of related parking provisions set forth in the City's zoning ordinance. In the downtown core area, policies of the Downtown Urban Design Plan shall take precedence.

(2) Limit curbside parking in accordance with the criteria set forth in this Circulation Element for the seven roadway classifications, and in accordance with the Livermore Urban Design Implementation Program.

4. Roadway and Parking Improvement Programs

a. General Roadway Improvement Programs. General roadway improvement programs which should be undertaken to implement the roadway system policies delineated above include the following:

*(1) **Road System Improvements List.** Maintain and periodically update a Road System Improvements List, consistent with the Future Roadway Network map, for use as a basis for citywide roadway improvement scheduling and budgeting, and traffic impact fee adjustment. The Road System Improvements List shall be part of the City's regularly updated four-year Capital Improvements Budget.*

*(2) **Road Construction.** Complete a citywide program of road system improvements based on: (a) the adopted overall layout diagrammed on the Future Roadway Network map (Figure 5) and (b) the City-maintained ongoing Road System Improvements List.*

*(3) **Volume/Capacity Monitoring.** Establish an ongoing City program for major road, intersection, and interchange monitoring to determine where peak-hour volume/capacity ratios are approaching or exceeding maximum City standards. Prioritize road system improvement needs based on these monitoring results.*

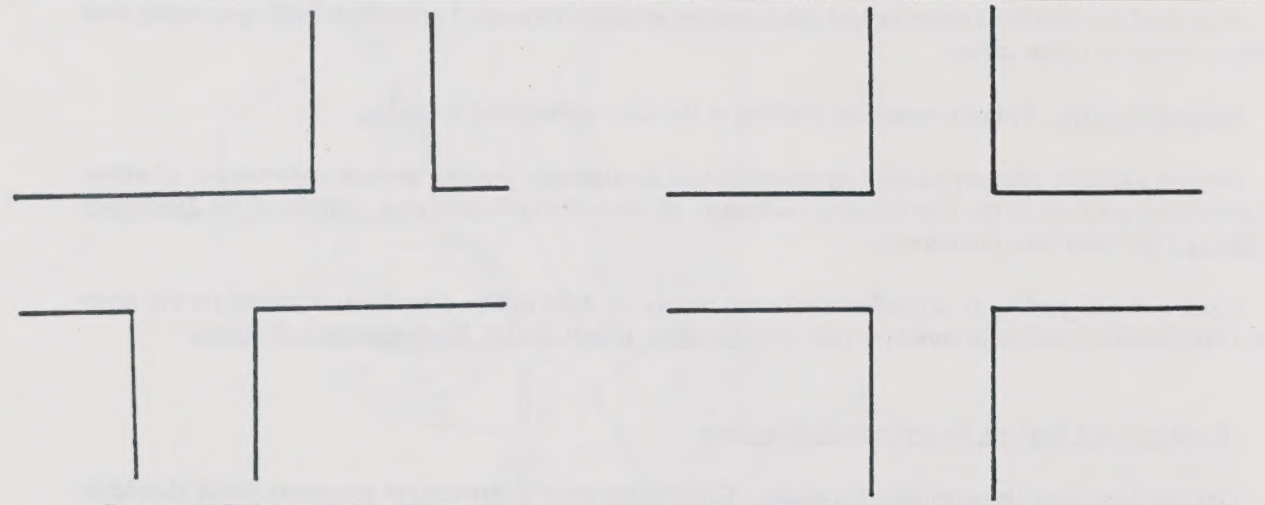
*(4) **Intersection Improvements.** Establish a citywide program of intersection improvements based on improvement needs identified through peak-hour volume/capacity monitoring. Prioritize intersection improvement needs based on peak-hour volume/capacity monitoring results. A peak-hour volume/capacity ratio of 0.85 should be the upper limit of acceptable level of service at major intersections.*

*(5) **Plan Lines.** Establish plan lines now for major streets in order to reserve adequate rights-of-way for the buildout road system improvement needs indicated in this Circulation Element.*

*(6) **Traffic Impact Mitigation.** Require new development to mitigate the traffic and circulation impacts it is creating in accordance with planned roadway system improvements.*

*(7) **Traffic Studies.** Require applicant completion and City approval of project-specific traffic studies and associated mitigation programs for those major development projects which may cause local road system peak-hour volume/capacity ratios to exceed the City standard. Condition project approvals on implementation of City-approved mitigation recommendations.*

*(8) **Major Intersections.** Avoid staggered T intersection configurations at major intersections (i.e., where major streets and collectors are planned to intersect), including the Las Positas Boulevard/El Charro Road, North Canyons Parkway/North Livermore Avenue, and Concannon Boulevard/Tesla Road intersections. These intersections should have four-way configurations and traffic signals. To the extent feasible, major intersections shall be spaced no closer than 1,000 feet.*



Staggered T Intersection (No) **Four-Way Intersection (Yes)**

*(9) **Accident-Prone Intersections.** Establish an ongoing Public Works Department program for evaluation of local intersections, including staggered T intersections. Identify warranted safety improvements and assign high priority to such improvements in City road improvement sequencing.*

*(10) **Land Use Impact Mitigation.** Incorporate adequate setbacks, landscaping, noise abatement, and other measures warranted to reduce significant new roadway impacts on adjacent land uses.*

*(11) **Neighborhood Protection.** Incorporate roadway improvement design measures which divert through traffic from, and minimize local traffic on, local residential streets in order to protect the quality and livability of Livermore neighborhoods.*

*(12) **Noise Abatement.** Incorporate appropriate noise abatement measures, including those suggested in the City's Noise Element, in the design of roads which may generate significant noise intrusion into residential and other noise-sensitive land uses (hospitals and schools). Design noise barriers in accordance with guidelines set forth in the City's Urban Design Implementation Program to reduce adverse visual impacts.*

(13) ***Utility Undergrounding.*** *Require undergrounding of transmission and distribution lines with new road construction, wherever possible.*

(14) ***Gateways.*** *Incorporate special gateway design treatments as recommended in the City's Environmental Resources Management Element and Urban Design Implementation Program for Portola Avenue, North Livermore Avenue, 1st Street, Springtown Boulevard, and Vasco Road.*

(15) ***Landscaping.*** *Incorporate roadside landscaping installation and maintenance programs as part of road system improvement measures recommended herein for key routes through residential, industrial, and commercial areas, and for segments through designated vineyard lands. Incorporate median landscaping along key segments of designated 4-lane and 6-lane routes. Revise City street standards (Standard Details) to include more specific requirements for such treatments.*

(16) ***Existing Street Trees.*** *Design designated future improvements to roads which are currently lined with mature trees (portions of East Avenue, S. Livermore Avenue, Las Positas Boulevard, Murrieta Boulevard, Portola Avenue, North P Street, South L Street, and Arroyo Road) to minimize tree loss or damage to the extent possible. Maintain an ongoing program of roadside tree care and replacement.*

(17) ***Grading.*** *Incorporate design measures which minimize the adverse visual impacts of grading where designated roadway improvements traverse hilly terrain. Adhere to the grading guidelines set forth in the City's Scenic Route Element and Urban Design Implementation Program in the design of such road segments.*

(18) ***Design Review.*** *Approve major road system improvement plans only after adequate design review, based where applicable, on design guidelines set forth in the following City policy documents:*

- *Livermore Urban Design Implementation Program;*
- *Downtown Redevelopment Strategy and Urban Design Plan;*
- *Scenic Route Element (including provisions for design and maintenance of landscaping, and restrictions on grading, overhead utilities, road widths, and signage); and*
- *Environmental Resources Management Element (including provisions for significant vistas, road design guidelines, and community entrance points).*

(19) ***Inter-City Coordination.*** *Cooperate with the neighboring cities of Dublin and Pleasanton to implement parallel road systems to relieve I-580 congestion. (Proposed interjurisdictional parallel routes include the North Canyons Parkway-Dublin Boulevard extensions, the Stanley Boulevard widening, and the Las Positas-Stoneridge Drive connection.)*

(20) ***County Coordination.*** *Cooperate and work with Alameda County in the planning of subregional arterial alignments, including the proposed Hartford Avenue-Dalton Avenue alignment for the North Canyons Parkway extension. Also, cooperate and work with Contra Costa County in the planning the Vasco Road (SR 84) alignment.*

(21) ***Regional Coordination.*** *Participate in the establishment and ongoing activities of the Tri-Valley Transportation Task Force.*

(22) ***Caltrans Coordination.*** *Maintain an active advocacy role in supporting, refining, and expediting the Caltrans I-580 and SR 84 improvement programs.*

(23) ***Signal System Management.*** *Develop a modern signal system management plan to provide for efficient operation and coordinated traffic flow on major streets.*

*(24) **Street Names.** Develop a comprehensive street naming plan which will clarify the hierarchy of streets, and provide for ready identification of through traffic routes for the motoring public.*

*(25) **Residential Development on Major Streets.** All residential development adjacent to major streets and Arroyo Road (south of Arroyo Mocho) shall be designed to limit access between the development and the street. This may be accomplished by either backing the lots to the street or by providing a frontage road.*

*(26) **Area Circulation Plans.** The City may prepare, when appropriate, area circulation plans to address future Local Street patterns in specific areas. Area circulation plans shall coordinate the Local Street system between future development areas and/or the location of Local Street intersections with Major Streets and/or Collector Streets. (Per CC Reso. 90-91)*

b. Specific Roadway Improvement Criteria. Specific roadway improvement criteria for identified road links and intersections which require improvement include the following:

*(1) **Isabel Parkway Interconnection South of I-580.** Assign highest priority to the completion, before 2010, of the proposed Isabel Parkway realignment of State Route 84 south of I-580, including the interchange with I-580, grade separation at Stanley Boulevard and signalized intersections of the route with major streets in order to reduce central area impacts associated with trucks and through traffic on Stanley boulevard and 1st Street.*

*(2) **Concannon Boulevard-Tesla Road Extensions.** Create an additional east- west connector in southern Livermore by extending Concannon Boulevard to connect with Isabel Avenue and South Livermore Avenue, in order to reduce operational impacts on the southern Livermore road system (East Avenue, 4th Street, and Stanley Boulevard) due to anticipated year 2010 and buildout traffic volumes. Base the design of improvements on the following criteria:*

- *In extending Concannon Boulevard east of Arroyo Road to South Livermore Avenue, City goals to preserve the rural quality of its designated vineyard lands shall be the overriding consideration and a 2-lane rural design standard shall be maintained, with separate left-turn lanes to facilitate access to Arroyo Road, Buena Vista Avenue, Mines Road, Vasco Road, and Greenville Road. Where the roadway is located through areas of urban development, right-of-way sufficient for a four-lane facility shall be obtained.*

- *Extend and improve Concannon Boulevard to provide a 4-lane facility between Holmes Street and Isabel Parkway.*

*(3) **Isabel Parkway Extensions.** Isabel Parkway shall provide connections to Vasco Road and Greenville Road, but its primary purpose shall be to serve local traffic within the North Livermore Area and a connection to the southern parts of the City. Isabel Parkway shall also be aligned to form the edge of the planned urbanized area in North Livermore. More detailed studies of its alignment from Hartman Road to I-580 shall be performed in conjunction with either development proposals for adjacent business and commercial park lands, Las Positas College, lands to the west of the mapped alignment, or in conjunction with a Specific Plan for the Planned urbanized area. These studies shall assess:*

- *Potential cut and fill impacts to the I-580 hills;*

- *Impacts to existing stream corridors;*

- *Provision of adequate roadway capacity, with plans for initial construction of 6-lanes and options to reduce the need for the 8-lane segment, such as reduced travel demand or additional lane capacity on Hartman Road extension or other routes; and*

- *Interchange placement and configuration.*

The City shall undertake a special feasibility study to determine the specific alignment of the extension through the Federal Communications Commission (FCC) property to Vasco Road and on to the Greenville interchange. This study shall in particular assess potential impact to the Bird's Beak wetlands and other sensitive environmental habitats.

(4) ***North Canyons Parkway Extension.*** *Coordinate the design and timing of the North Canyons Parkway westerly extension with the City of Dublin for extending Dublin Boulevard.*

(5) ***I-580 Improvements.*** *Identify and advocate appropriate I-580 interchange improvements and related design parameters for use by Caltrans in finalizing related improvement plans.*

(6) ***Vasco Road Relocation.*** *Continue to work with Alameda and Contra Costa counties and other agencies to implement the proposed Vasco Road realignment.*

(7) ***Las Positas Boulevard Improvements.*** *Coordinate design, timing and location of the westerly extension of Las Positas Boulevard with City of Pleasanton plans for an easterly extension of Stoneridge Drive.*

(8) ***Stanley Boulevard.*** *Coordinate design and timing of the westerly widening of Stanley Boulevard with City of Pleasanton plans for easterly improvements to the route.*

c. Parking Program. Implement the central area parking improvement measures set forth in the City's Redevelopment Strategy and Urban Design Plan.

C. PEDESTRIAN AND BICYCLE SYSTEM

REFER TO THE LIVERMORE BICYCLE/PEDESTRIAN PLAN UPDATE AND EQUESTRIAN TRAILS STUDY

Refer to the North Livermore General Plan Amendment for additional goals and policies which support and expand upon the goals and policies of the Circulation Element as needed to clarify the City's desires for the area's bicycle/pedestrian and equestrian system.

D. TRANSIT SYSTEM

1. Local and Regional Transit Provisions--1988

a. Local Transit. Existing transit service was being provided in 1988 by the Livermore-Amador Valley Transit Authority (LAVTA) through their "Wheels" bus lines. Service was being provided hourly on such streets as East Avenue, Stanley Boulevard, Holmes Street, Arroyo Road/Concannon Boulevard, and Springtown Boulevard-1st Street/Portola Avenue. There were two bus routes to Las Positas College, and three connecting the Springtown area with other locales in Livermore south of Interstate 580 (one route along 1st Street and two along Vasco Road). In 1988, ridership in Livermore was estimated at 932 persons on an average weekday.[12] Ridership fluctuated widely and was heavily school dependent.[13] LAVTA was also operating a demand-based "dial-a-ride" program which utilized vans.[14]

b. Regional Bus Service. As of 1988, Greyhound/Trailways Bus Lines was operating an intraregional and interregional bus service from a downtown terminal on 2nd Street at M Street.[15] The company was providing bus service from Livermore to other major communities in the Bay Area as well as to other regions beyond the Bay Area (four buses to San Jose, four buses to Tracy in San Joaquin County, one bus to Oakland, and one bus to San Francisco on a daily basis). As of late 1988, future expansion of bus service to Oakland and San Francisco had been proposed, but specific planning for service expansion had not yet been undertaken.[16]

c. Local Taxi Service. Another local alternative to private automobile usage is taxi service. In 1988, the Tri-Valley Cab Company in Pleasanton was operating five cabs on an on-call basis 24 hours a day, seven days a week.[17] The average response time was estimated to be 10 to 20 minutes. Yellow Taxi, located in Livermore, previously provided six to eight cabs on a daily basis. However, as of late 1987, the business was for sale and not operating.[18]

d. BART Transit Provisions. The Bay Area Rapid Transit District (BART) currently operates an Express Bus service between the City and the Hayward and Bay Fair (San Leandro) BART stations. As of 1988, the "U" line, operating from the Hayward station, was providing transit service to the Lawrence Livermore National Laboratory on weekdays and to the Valley Memorial Hospital on weekends. The "UL" line, operating from the Bay Fair station, was providing weekday transit service to the Lawrence Laboratory.

Both Express Bus lines were offering service not only between end destination points, but also to various

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[12]Susan Bruestle, Transit Development Planner, Livermore-Amador Valley Transit Authority, personal communication, November 6, 1987.

[13]Ibid.

[14]Vic Sood, General Manager, Livermore-Amador Valley Transit Authority, personal communication, December 1, 1987.

[15]Gloria Cohn, Ticket Agent, Greyhound/Trailways Bus Lines, personal communication, July 8, 1988.

[16]Ibid.

[17]Anne Ghorbani, Dispatcher, Tri-Valley Cab Company, personal communication, November 10, 1987.

[18]Jimmy Overby, Owner, Yellow Taxi, personal communication, November 12, 1987.

intersections within the City, with several stops along Murrieta Boulevard and East Avenue.[19] In late 1987, the average weekday ridership was estimated at 1,099 persons on line "U" and 617 persons on the "UL".[20]

The majority of passengers riding the Livermore portion of these lines has been accessing the buses at Stanley Boulevard/Murrieta Boulevard, Stanley/Valley Memorial Hospital, and East Avenue/Lawrence Laboratory.[21]

2. Local and Regional Transit Improvement Plans

The Livermore-Amador Valley Transit Authority maintains a facilities and service expansion plan which in 1988 proposed the following two-to-five-year measures:[22]

- construction of a maintenance operation facility to consolidate operations and improve vehicle reliability;
- replacement of current vehicles with new, lift-equipped vehicles;
- acquisition of expansion buses to increase vehicle capacity;
- reduction in headways from one hour to 1/2 hour; and
- taking over the existing BART Express Bus U Route.

The transit authority in 1988 was trying to secure federal Urban Mass Transit Administration funds.[23] Existing funding was from Transit Development Act fees and the half cent sales tax revenue.

3. Regional Transit Outlook

The most significant local change in non-automobile modes anticipated by the year 2010 will be the extension of regional passenger rail service from the Bay Fair BART station into the Livermore-Amador Valley.

a. BART Extension Plans. In 1987, the Bay Area Rapid Transit District completed initial planning studies for a Livermore extension.[24] The proposed rail extension was split into two phases. Phase I would extend BART to Dublin. Up to $170 million of the total $220-to-$237 million estimated cost of this Dublin extension would be funded by the half-cent sales tax authorized by Measure B, which was passed by Alameda County voters in 1986.[25] It was anticipated that this extension could open as early as 1995.[26] A subsequent phase,

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[19]Guy Whitley, Bus Operations Supervisor, Bay Area Rapid Transit District, personal communication, November 4, 1987.

[20]Ibid.

[21]Guy Whitley, personal communication.

[22]Susan Bruestle, personal communication.

[23]Ibid.

[24]Bay Area Rapid Transit District, 1987 Five-Year Plan, August 1987.

[25]Measure B, approved by Alameda County voters in November 1986, increases the state sales tax in Alameda County by 1/2 cent to fund highway and transit projects.

[26]Allan Hirsch, "Valley BART Gains Steam", Tri-Valley Herald, November 5, 1987.

Phase II, would extend BART along Interstate 580 to Pleasanton and eastern Livermore.[27] However, in late 1988 no funding existed or was projected, and actual physical planning of the alignment remained 10 to 20 years in the future.[28]

On March 19, 1986, the City of Livermore recommended a freeway route alignment to serve as the basis for selecting a preferred alignment for the Livermore-Pleasanton Extension. In accordance with the City's recommendation, on April 10, 1986, the BART Board of Directors adopted a preferred route alignment for the Livermore-Pleasanton Extension which includes a West Livermore station near the proposed State Route 84/I-580 interchange, an East Livermore station near the First Street/I-580 interchange, and possible additional mileage and a station near the major research laboratories east of Vasco Road (BART Board Resolution 4129).[29]

On August 23, 1988, BART acquired land for a possible West Livermore station site located south of I-580 near the corner of Airway Boulevard and Kitty Hawk Road. Until the Livermore extension is constructed, BART plans to build an interim 200-space park/ride facility at this site subject to environmental review. If constructed it is anticipated that the park/ride lot could be completed and in operation by the summer of 1990.[30]

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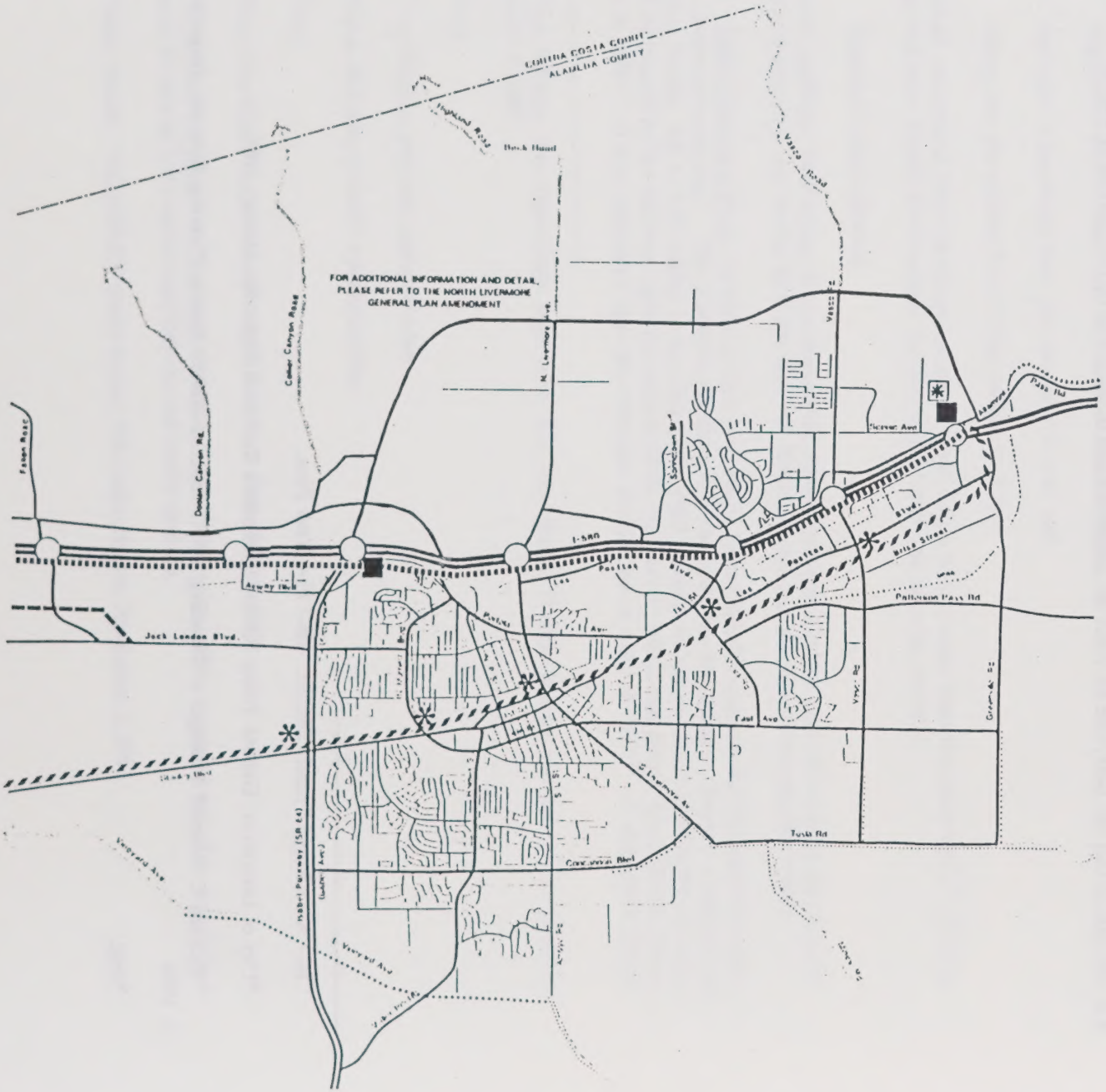
[27]Bay Area Rapid Transit District, -1987 Five-Year Plan.

[28]City of Livermore, Growth Policy Review Committee Technical Appendix, January 1987.

[29]Richard C. Wenzel, Manager of Planning, BART letter to Robert Brown, Planning Director, November 3, 1988.

[30]Ibid.



FUTURE LIGHT RAIL TRANSIT

STATION

FUTURE BART ROUTE

STATION

BART YARD

INTERMODAL TRANSPORTATION FACILITY

Figure 7

FUTURE BART AND LRT ROUTES

CIRCULATION ELEMENT
CITY OF LIVERMORE GENERAL PLAN

Based on discussions with the City, BART is currently considering alternative sites for the East Livermore station and storage/maintenance yard. The alternative sites include: 1. First Street/I-580 site (adopted by BART Board, station only); 2. East of Vasco Road, along the railroad right-of-way (station and/or maintenance yard); 3. Las Colinas Road, north of I-580 (station only); and, 4. near the Intermodal Transportation Facility site (station and/or maintenance yard). The City will work with BART to determine a mutually acceptable site for the East Livermore station and the storage/maintenance yard.

b. LRT Extension Plans. In 1987 and 1988, Alameda County was undertaking a countywide transportation planning effort. The County considered the preservation of an intra-county or Tri-Valley transit corridor, preferably along the presently unused SPRR corridor, to be of prime importance in that effort.[31] It was anticipated that operation of a light rail transit (LRT) line would be contracted out to LAVTA or to another public transit company.[32]

As of 1988, non-Livermore portions of the intra-county SPRR corridor had been acquired by the county for this purpose, and acquisition of other portions was being negotiated. Although a precise alignment for the LRT route through Livermore had not been specified by late 1988, the county was advocating a similar alignment along the City's SPRR corridor. As of 1988, no corridor acquisition had occurred for the proposed Livermore segments.

c. Circulation Element Assumptions. BART extension from Dublin to Livermore is not likely until sometime beyond the year 2000. Establishment of an intra-county or Tri-County LRT system is also a long-range prospect. Therefore, the traffic model projections used in formulating this Circulation Element are based on the assumption that BART rail or LRT service will not be extended to Livermore by the year 2010. Nevertheless, prior to that date, a future BART or LRT extension to Dublin would affect traffic volumes on the major regional links; i.e., Interstate 580 and SR 84.

4. Transit Policies

a. Local Transit Policy. Promote increased local transit ridership as an alternative to driving.

b. Proposed BART and LRT Routes. The City-preferred BART and LRT route layouts and associated potential transit station sites are mapped on Figure 7, the ***Future BART and LRT Routes*** *map. For* ***BART,*** *the I-580 Freeway Route alternative is preferred by the City. The anticipated local alignment of this route, and associated station location alternatives, are diagrammed on the map. The City-preferred alignment for the proposed* ***LRT system*** *segment through Livermore is also diagrammed on the map.*

These layouts are designed to provide efficient and convenient BART or LRT service, in conjunction with local transit routes (LAVTA "Wheels" buses) to the following local points:

- *major local employment centers,*
- *the central area,*
- *Las Positas College,*

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[31]Dennis Fay, Manager-Transportation Planning, Alameda County Public Works Department, personal communication, November 20, 1987.

[32]John Finstermacker, Assistant Chief of Real Estate Division, Alameda County Public Works Department, personal communication, November 10, 1987.

- *local high schools and junior high schools,*
- *Valley Memorial Hospital, and*
- *the Civic Center.*

c. Regional Transit Policy. *Strongly advocate extension of either BART or LRT passenger rail service to Livermore via the routes diagrammed on the* ***Future BART and LRT Routes*** *map (Figure 7).*

Refer to the North Livermore General Plan Amendment for additional goals and policies which support and expand upon the goals and policies of the circulation Element as needed to clarify the City's desires for the area's transit system.

5. Transit System Programs

The following programs should be undertaken to implement the transit policies delineated above:

a. Local Transit Programs. Programs to facilitate and promote local transit use should include:

(1) ***LAVTA.*** *Support and advocate Livermore-Amador Valley Transit Authority programs to provide local transit service.*

(2) ***Turnouts and Shelters.*** *Require the installation of bus turnouts and shelters along existing and planned transit routes, coincident with new development, financed by developers, and in cooperation with LAVTA and BART.*

(3) ***Transfer Stations.*** *Provide adequate transfer stations and interconnections between LAVTA and BART Express transit routes in cooperation with LAVTA and BART.*

(4) ***Paratransit.*** *Support and advocate special transit services for Livermore elderly and handicapped persons.*

(5) ***Intercity Coordination.*** *Coordinate City of Livermore transit improvement programs with similar programs underway in the City of Pleasanton and Dublin.*

b. Regional Transit Program. The City should implement one of the following alternative programs to provide direct regional transit service to the City:

(1) ***SPRR Light Rail Corridor.*** *Cooperate with Alameda County in preserving a potential LRT corridor along the SP right-of-way through Livermore, as diagrammed on Figure 7. Participate actively in subregional studies, funding, acquisition, joint agreements, and other measures necessary to implement LRT service to Livermore. Consider the implications of an LRT system in future land use planning along this corridor.*

(2) ***BART Extension.*** *Take necessary measures to provide for long-term extension of direct BART service to Livermore, including reservation of adequate corridors along the proposed BART alignment, reservation of adequate acreages at proposed BART station locations, and establishment of complementary land use policies for the corridor and station areas.*

c. Intermodal Transportation Facility. *Identify and evaluate potential locations for an intermodal transportation facility to house and coordinate the various existing and potential City transit modes. Coordinate planning for the location of this intermodal facility with Alameda County, the Livermore-Amador Valley Transit Authority, and the Bay Area Rapid Transit District. The intermodal facility should be designed to serve as a terminal for all transit modes, including local and regional fixed-route bus systems, BART or LRT, and Amtrak*

lines, employer shuttle systems, paratransit, car rental agencies, and taxi services. The City should take necessary measures to secure state funding for facility studies. (The City-preferred location is shown on the Future BART and LRT Routes map. See also section II.G.4.b.)

E. TRANSPORTATION SYSTEMS MANAGEMENT (TSM)

1. Transportation Systems Management Programs

Several communities and major employers in the Bay Area and across the country have initiated transportation systems management programs to decrease peak-hour vehicular traffic, reduce noise levels adjacent to major routes, reduce air pollutant emissions, and alleviate traffic delays.[33] TSM programs "are designed to reduce the number of vehicle trips, shorten trips lengths, and change the timing of trips".[34] TSM measures can include some combination of ridesharing (carpools and vanpools), public transit, bicycling, walking, flexible work hours, and preferential parking. Within the San Francisco Bay Area region, the Metropolitan Transportation Commission promotes such commute alternatives through publication and distribution of documents[35] and transportation coordinator training classes.

Implementation of an effective local TSM program could significantly reduce the potential traffic congestion associated with buildout of the Livermore planning area as provided for in the General Plan.

2. Existing Local TSM Provisions

a. Livermore. As of 1988, Livermore did not have a City-administered TSM program. However, the major employer in the vicinity, Lawrence National Laboratory (LNL), did administer an ongoing "Lab Trans" program with a part-time coordinator.[36] The Lab Trans program included the promotion of non-automobile modes such as carpools, vanpools, public transit, bicycles, and walking. Information regarding "Wheels" (LAVTA) and BART Express Bus lines was being provided to laboratory employees. Further, a bus line from Stockton was being made available to laboratory employees, and a second bus line from Modesto was planned.[37]

In addition to the LNL program, the Triad Systems industrial development, a major new business complex in Livermore, has also instituted a TSM plan. The Triad program is similar to the TSM plan developed for the Hacienda Business Park in Pleasanton.[38] The Triad TSM Plan requires the compliance of every employer locating within the development.[39]

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[33]Metropolitan Transportation Commission, Traffic Mitigation Reference Guide, December 1984.

[34]Ibid.

[35]Metropolitan Transportation Commission, Commute Alternatives, May 1985; and, Traffic Mitigation Reference Guide.

[36]Joe Podrasky, Ridesharing Coordinator, Lawrence Livermore National Laboratory, personal communication, December 2, 1987.

[37]Ibid.

[38]Tom O'Malley, Vice-President of Administration, Triad Systems Corporation, personal communication, November 30, 1987.

[39]Ibid.

Three eastside commercial-industrial projects (Dividend, Orchard, and Standard) have also developed a TSM plan, the Eastside Projects TSM Plan, which establishes individual employer requirements and an employers TSM coordinator, and proposes City monitoring of the effectiveness of the Eastside TSM Plan.

b. Other Tri-Valley TSM Programs. A number of similar private TSM programs have been instituted in the Tri-Valley area. In addition to the Hacienda Business Park TSM program, employer TSM plans are also being implemented at the Bishop Ranch Business Park in San Ramon.[40] At the citywide level, Pleasanton adopted a comprehensive TSM ordinance on October 2, 1984.[41] Pleasanton requires large employers and business complexes, such as Hacienda Business Park, to conduct or provide the following[42]:

- A transportation survey;
- A comprehensive TSM program;
- A related information program;
- Inclusion of TSM requirements in the business park's Conditions, Covenants, and Restrictions (CC&Rs) and leases;
- An annual TSM status report; and
- Participation on the city TSM Task Force.

Pleasanton also employs a full-time city transportation coordinator to assist employers and employers' transportation coordinators, answer public inquiries, and monitor the effectiveness of various TSM programs. In addition, the Pleasanton transportation coordinator works with LAVTA to disseminate local bus service information.[43]

Other cities and counties in northern California that have adopted TSM ordinances include Palo Alto, Sacramento, Sacramento County, and south Placer County.[44]

3. TSM Policies

The following TSM policies have been adopted by the City as a means of achieving the transportation goals listed on pages 5 and 6 of this Circulation Element:

a. Establish an effective transportation systems management (TSM) program to reduce daily and peak-hour vehicular trips. Such a program can help maintain acceptable volume/capacity ratios on the local street system.

b. Include such TSM measures as promotion of ridesharing (carpools and vanpools), public transit, bicycling, walking, flexible working hours, and preferential parking.

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[40]Metropolitan Transportation Commission, Traffic Mitigation Reference Guide.

[41]City of Pleasanton, "TSM Ordinance Summary", The Pleasanton Plan FEIR, August 1986.

[42]Ibid.

[43]Susan Bruestle, personal communication.

[44]Metropolitan Transportation Commission, Traffic Mitigation Reference Guide.

4. TSM Programs

The following local programs should be undertaken to implement the TSM policies delineated above:

a. Citywide TSM Program. Establish a citywide program of specific TSM measures based upon Metropolitan Transportation Commission TSM guidelines.

b. City TSM Coordinator. Appoint a City TSM Coordinator to administer the Citywide TSM program, prepare and implement TSM Ordinance, assist local employers, answer public inquiries, and monitor the effectiveness of the various individual TSM efforts Citywide.

c. Employer TSM Measures. Require establishment of the following types of TSM measures by major new local employers:

(1) Appointment of a transportation coordinator (perhaps an employee of the building management or one of the larger tenants, or an association of tenants) to institute a TSM program and coordinate that effort with the citywide program;

(2) Promotion of transit use through informational programs and, perhaps, discount sale of transit passes to employees;

(3) Promotion of carpooling through carpool information assistance and preferential parking for carpool vehicles;

(4) Promotion among tenants of a flex-time program;

(5) Establishment of bicycle use incentives for employees, including parking or storage provisions and assistance towards bicycle purchase;

(6) Incorporation of TSM requirements in project CC&Rs and leases;

(7) Completion of periodic surveys of employees to determine the effectiveness of TSM measures undertaken and the need for revised or additional measures; and

(8) Submittal to the City of an annual TSM report.

d. City TSM Ordinance. Adopt a TSM ordinance as the principal means of implementing TSM objectives. Include the following ordinance provisions:

- *Description of City TSM coordinator authority and responsibilities;*
- *Description of peak-hour traffic reduction goals;*
- *Description of TSM requirements for local employers; and*
- *Description of TSM program evaluation and reporting requirements, including:*
  - *annual surveys of alternative transportation mode usage and projected demand, and*
  - *periodic ordinance reevaluation and revision.*

F. TRAFFIC IMPACT MITIGATION FUNDING

1. Fiscal Impact of Transportation System Improvements

The rate of urban development in recent years has exceeded the fiscal ability of the City to provide associated transportation system improvement needs within the parameters of this Circulation Element. This Circulation Element and other recent examinations commissioned or conducted by the City have identified various improvements to the City of Livermore transportation system which will be necessary to adequately serve development growth under the land use policies of the General Plan. The City recognizes the potential future costs of these infrastructure improvements and the necessity of funding such improvements at minimal cost to the City.

2. Traffic Impact Funding Policy

Transportation system improvement needs shall be funded, to the extent possible, by new development at minimal cost to the City.

3. Traffic Impact Funding Programs

a. Traffic Impact Funding Mechanism. Establish the rules, regulations, and administrative procedures necessary to implement a traffic impact funding mechanism. Implementation of the traffic impact funding mechanism will include the establishment of a roadway improvements priority list. This list shall be periodically reviewed and updated, but not less than every three years.

b. Traffic Impact Funding Ordinance. Adopt a traffic impact funding ordinance to set forth specific rules, regulations, and procedures. The ordinance should address such traffic impact fee subjects as determination, collection, refund, and use of fee proceeds.

c. Traffic Impact Funds. Require new development to contribute to City traffic impact funds to mitigate the Citywide cumulative traffic and circulation impacts it is creating in addition to other exactions that are otherwise imposed through normal City subdivision, development review, and impact mitigation procedures.

d. Uses of Traffic Impact Funds. Collected traffic impact funds shall be used for the following transportation improvements:

*(1) **Road system improvements** consistent with the parameters set forth in this Circulation Element, including paving, striping, curb and gutter, sidewalks, medians, landscaping, storm drainage facilities, traffic signals, directional signage, street lighting, noise walls, rights-of-way acquisition, bicycle facilities, public transit facilities, bridges, grade separations, and improvements in connection therewith, which are not otherwise provided by or required of development pursuant to the City's subdivision, zoning, and building permit regulations.*

*(2) Costs associated with implementing the provisions of a **transportation systems management (TSM)** program as may be identified in the recommended City TSM Ordinance.*

G. RAILROAD SERVICE

1. Existing Heavy Rail Operations

a. Freight Service. In 1982, Union Pacific (UP) took over the operations of the Western Pacific Railroad. UP operates a freight railway service through the Livermore planning area on the former Western Pacific right-of-way.[45] In 1988, operations on this line were averaging 11 trains daily.[46] Five UP trains were running in each direction on a daily basis. In addition, Southern Pacific (SP) was operating six local trains on the UP right-of-way under a "joint track" agreement.[47]

b. Passenger Service. In 1988, no commercial passenger heavy rail service was being provided in the City. The closest heavy rail passenger station to Livermore was the Stockton Amtrak station.[48] Amtrak was operating a limited bus service between the Stockton station and the Livermore Holiday Inn.[49] However, depending on their eventual destination, most Livermore railroad patrons were driving to Amtrak stations in Martinez, Oakland, and San Jose.[50]

c. Grade-Separated Crossings. In 1988, railroad grade separations existed at five locations in Livermore: North P Street, North Livermore Avenue, East 1st Street, Murrieta Boulevard, and Vasco Road. Two additional grade separations were proposed for North Mines Road and Isabel Parkway in conjunction with proposed extensions of these two roadways. Automatic gates and lights existed at North L Street and Junction Avenue.

2. Anticipated Future Passenger Service

The routing of one or more existing San Joaquin valley Amtrak trains (travelling between Oakland and Fresno/Bakersfield) through the Livermore/Fremont area has been proposed by various civic groups and elected officials. However, as of late 1988, a formal proposal had not been submitted either to Amtrak or Caltrans.[51] Possible alignments for future Amtrak service include a route over the Altamont Pass on the line.

3. Rail Service Policy

(1) The City shall advocate the expansion of Amtrak passenger railroad service to Livermore.

(2) The City shall encourage the expansion or rail transportation facilities and services to meet the needs of industrial growth as needs arise. Concurrently, negative environmental impacts of the rail system shall be minimized.

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[45]Dave Applegate, Manager-Administration and Purchasing, Union Pacific Railroad Company, personal communication, November 10, 1987.

[46]Byron Schroeder, Chief Dispatcher, Union Pacific Railroad Company, personal communication, November 10, 1987.

[47]Under a new joint use agreement between Union Pacific and Southern Pacific, effective April 1, 1988.

[48]Amtrack, Information and Reservations, November 10, 1987.

[49]Debbi Peck, Manager, Travel Bug (Travel Agents), personal communication, November 10, 1987.

[50]Ibid.

[51]Arthur Lloyd, Director of Public and Government Affairs (Western Division), Amtrak, personal communication, July 11, 1988.

(3) The City shall encourage the appropriate public agencies to acquire abandoned railroad right-of-way for the development of a light rail system or for recreational use.

4. Passenger Service Programs

a. Amtrak Route. Take necessary measures to provide for the routing of Amtrak passenger railroad service through the City, including reservation of adequate acreages at proposed Amtrak station locations. The City should submit a formal written proposal for future Amtrak routing through Livermore to Amtrak and Caltrans, including a discussion of station facilities to be provided. (Minimum station facilities include a 500-to-600-foot platform, shelter, lighting, and public telephones.)

b. Intermodal Transportation Facility. Identify and evaluate potential locations for an intermodal transportation facility to house and coordinate the various existing and potential City transit modes, including a future Amtrak line. Coordinate planning for the location of this intermodal facility with Amtrak and Caltrans. The City should take necessary measures to secure state funding for related facility studies. (The City-preferred location is shown on the Future BART and LRT Routes map. See also section II.D.4.c.)

H. AIR TRANSPORTATION

1. Existing Air Transportation Provisions

The Livermore Airport is the only municipal airport in the Livermore-Amador Valley. Airport improvements are undertaken in accordance with the City's Airport Master Plan. The current Master Plan was adopted in 1975 and has a 20 year planning horizon. This plan indicates a possible 1,250 foot westward extension of the runway which would necessitate the relocation of six fairways[52] at the adjacent Las Positas golf course. In addition, the City's General Plan, in response to the Alameda County Airport Land Use Policy Plan[53], reserves acreage for an airport runway approach clear zone. The clear zone is necessary for aviation operations safety.

Most local airport activity in 1988 involved small, private, prop-driven aircraft, although a number of corporate planes (turbo-prop and turbo jets) were also using the air field on a regular basis. In addition, Continental Aviation was operating a Lear Jet charter service from the airport. The 1988 airport operations level was estimated to be approximately 85 flights daily, based on the 29,857 flights recorded during the November 1986 to October 1987 period.

Other than those of Continental Aviation, the Livermore Airport was not accommodating any commercial flights. Livermore residents wishing to fly commercially generally travel to commercial airports in Oakland, San Jose, Concord, Stockton, and Sacramento.[54]

2. Air Transportation Policies and Programs

(1) Air transportation operations and improvements shall be based on the policies and programs set forth in the Livermore Municipal Airport Master Plan component of the General Plan.

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[52]City of Livermore, Master Plan, Livermore Municipal Airport, December 1975.

[53]Airport Land Use Commission of Alameda County, Alameda County Airport Land Use Policy Plan; July 1988.

[54]Debbi Peck, personal communication.

(2) To protect the Municipal Airport from encroachment by incompatible uses, the City shall ensure appropriate development within the immediate vicinity of the airport which meets noise standards and flight clearance requirements.

(3) New residential land use designations or the intensification of existing residential land use designations shall be prohibited within the Airport Protection Area as shown on Exhibit A (see page). (Per CC Reso. 90-91)

I. LOCAL PUBLIC UTILITIES AND FACILITIES

1. Existing Public Utilities Provisions

Local public utilities and facilities, including water supply lines, sewer lines, storm drainage systems, natural gas pipelines, and electrical transmission lines, are considered in the Public Facilities and Services component of the City's General Plan.

2. Public Utilities Policies

Most City policies applicable to Public Utilities and Facilities are set forth in the Public Facilities and Services component of the General Plan. Additional policies applicable to public utility improvements which may affect the City's transportation system are set forth below:

a. The City shall consider the effects on transportation systems of public utility improvements, including extensions of underground pipelines and overhead transmission lines and associated utility rights-of-way.

b. The City shall ensure that, to the extent possible, all pipelines and electrical transmission lines are placed underground.

3. Public Utilities Programs

a. Coordination of Public Utility Improvements with Roadway Improvements. Installation of additional public utility extensions necessitated by new development shall be constructed concurrent with roadway improvements to minimize traffic disruption, associated environmental impacts, and construction costs.

b. Public Utility Coordination. Work with Pacific Gas and Electric, the Livermore-Amador Valley Waste Management Agency, and other involved public utility agencies to select alignments for pipelines and electrical transmission and distribution lines and associated utility rights-of-way.

c. Undergrounding of Public Utilities. Require undergrounding of all new extensions of public utilities, including electricity, telephone, and cable services.

d. Design Review. Improvements of local public utilities and facilities shall follow design guidelines set forth in the Scenic Route Element and the Environmental Resources Management Element components of the General Plan.

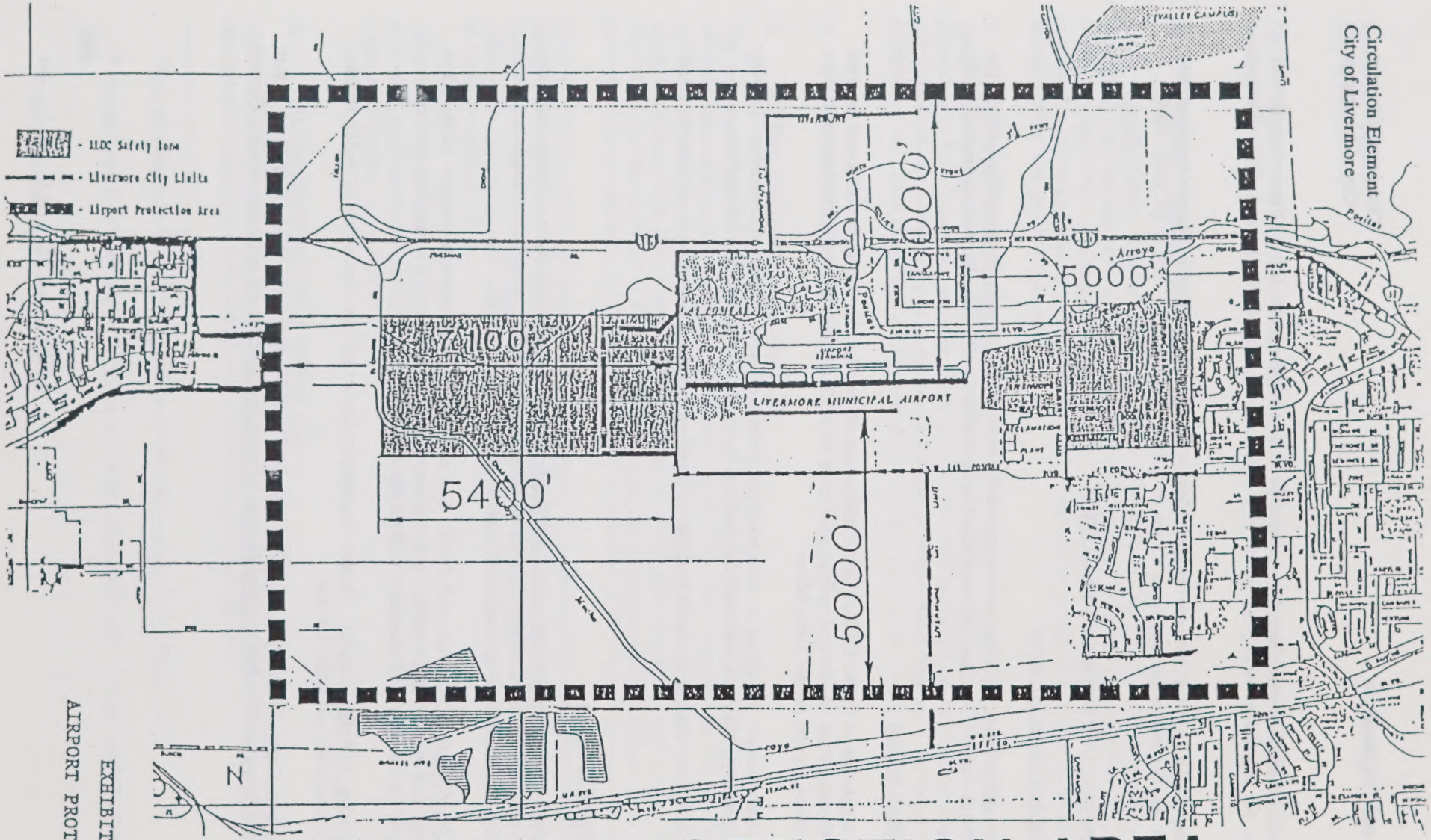


EXHIBIT "A"
AIRPORT PROTECTION AREA

AIRPORT PROTECTION AREA

City of Livermore, California

III. GLOSSARY

The following glossary of terms and abbreviations is provided to assist the reader in understanding the Circulation Element and to prevent misinterpretation.

Abbreviations

BART	Bay Area Rapid Transit District
CRPs	Critical Roadside Points
EIR	Environmental Impact Report
LAVTA	Livermore-Amador Valley Transit Authority
LRT	Light Rail Transit
SP	Southern Pacific
SPRR	Southern Pacific Railroad Right-of-Way
TSM	Transportation Systems Management
UP	Union Pacific

Arterial

See Major Streets.

Bicycle Path

A paved route not on a roadway, expressly reserved for bicycles traversing an otherwise unpaved area. Bicycle paths are intended primarily for recreational use.

Bicycle Route

A corridor existing on a roadway in addition to any motor vehicle lanes, expressly reserved for bicycles. On-street bicycle routes are intended primarily for commuter use.

Bikeways

Bicycle paths and bicycle routes.

Clear Zone

That section of the approach zone of the Municipal Airport centered on the extended runway centerline within which land use is restricted.

Collector

A relatively low-speed, medium-capacity street which collects and distributes local traffic moving between local and major streets. Collector routes provide for circulation between neighborhoods, and divert through traffic from local streets. Direct access to abutting properties (driveway spacing) is stringently limited. Prohibitions on curbside parking may vary with road widths and traffic conditions. Collector streets are typically two- to four-lane facilities.

Community Entrance Points

Significant, major gateways. See Gateways.

Critical Roadside Points (CRPs)

Locations along roadway segments with existing or anticipated high traffic volumes adjacent to sensitive land uses.

Four-Way Intersection

An intersection which provides direct through connections for cross streets.

Freeways

State-designated, relatively high-speed, high-capacity routes serving statewide and interregional circulation needs. Direct access is limited to highways and major streets only, via freeway interchanges. Major streets cross at a different grade level. No direct land service function is provided. In urban areas, freeways are typically eight- to ten-lane divided facilities.

Gateways

A point along a roadway entering the City at which a motorist gains a sense of having left the environs and of having entered the City.

Goal

A general, overall, and ultimate purpose, aim, or end which applies to all transportation components, to which the City will direct its policies and programs related to roads, pedestrian and bicycle facilities, funding, railroad service, and air transportation.

Highways

State-designated, relatively high-speed, high-capacity routes serving needs for interregional, through-traffic movement and interconnection between countywide road system components. Highways also connect local major streets with freeway interchanges. Local direct access is limited to major streets via signal-controlled intersections. Left turns are prohibited or highly restricted. Direct land service (driveways, etc.) and roadside parking are also prohibited. In urban areas, highways are typically four- to six-lane divided facilities.

Intermodal Transportation Facility

A transportation terminal which serves several transit modes, such as local and regional bus lines, light rail transit systems, passenger railroads, employer shuttle systems, paratransit, car rental agencies, and taxi services. The intermodal facility often houses restaurants and convenience shops (e.g., newspaper stands, florists, dry cleaners, etc.). See Terminal.

Intracounty Routes

Medium-speed, low-capacity rural roads on the City's urban fringe which are components of the subregional road system. Typically maintained at county two-lane rural standards (no curbs or gutters).

Landscaping

Plantings, including trees, shrubs, and groundcovers, which are designed, selected, installed, and maintained so as to permanently enhance the sides or medians of a roadway.

Light Rail Transit (LRT)

An intraregional, or subregional passenger rail system characterized by orientation towards local service, with several transit stops and convenient transfer points to local bus lines; operates on narrower rails and railways than conventional railroads (heavy rail).

Local Streets

Low-speed, low-capacity minor streets that provide for circulation within neighborhoods, with direct access to abutting land uses. Street design standards and layouts are typically used to discourage through traffic movements, avoid high travel speeds and volumes, and minimize neighborhood noise and safety impacts. Curbside parking is usually allowable. Local streets are typically two lanes.

Major Streets

Local medium-speed, high-capacity routes for intracity, cross-town travel and local access to freeways, highways, and the subregional road system, via interchanges and signal-controlled intersections. Major streets also interconnect collector and local streets via signal and stop-sign controlled intersections, respectively. The frequency of direct access to abutting properties is limited to avoid interference with the through traffic function of these routes. Direct access is limited to essential driveway locations away from intersections. New single-family development should not front on major streets. Strip commercial development should also be avoided to reduce "side friction." Roadside parking should be prohibited. Major streets are typically four- and six-lane divided facilities.

Modes

Various means of transportation, including private autos, taxis, local buses, interregional bus service, light rail systems, heavy rail service, and air transportation.

Paratransit

Demand-based transit systems; non-fixed route transit.

Peak-Hour

For any given roadway, the daily, one-hour period during which traffic volume is the highest.

Plan Lines

Official lines designated on City base maps within which land shall be reserved for future rights-of-way dedication or acquisition for anticipated future public facilities expansion (roadways, railways, and utility lines).

Policy

A specific statement of principle related to a specific component of the overall transportation system (roads, pedestrian and bicycle facilities, transit, etc.), which implies a clear City commitment in order to meet certain overall Circulation Element goals, but is not mandatory.

Pro Rata

Refers to the proportionate distribution of the cost of street and other infrastructure improvements to new development on the basis of projected use or relative benefit.

Program

An action, activity, or strategy carried out or adopted to implement an adopted policy.

Right-of-way

The strip of land dedicated for public facilities use (roadways, rail– ways, and utility lines).

Road Links

Specific roadway segments identified for evaluation in traffic projection and environmental impact analyses.

Road Linkages

Interconnections between specific areas of the City via highways, major streets, and collectors.

Scenic Route

A roadway officially designated in the General Plan for special treatment by virtue of the valued visual character of its roadside land– scape, or the scenic vista or view it may provide of the Livermore-Amador Valley as a whole, or of areas within the Valley having valued scenic qualities.

Sensitive Land Uses

Land uses, such as residential neighborhoods, schools, and hospitals, which could be readily affected by increases in traffic volumes on roadways in the immediate vicinity.

Sensitive Receptor Areas

Locations, such as within or near residential neighborhoods, schools, and hospitals, where measurable adverse environmental impacts (noise, air quality, etc.) could be expected due to traffic volume increases on nearby roadways.

Shall

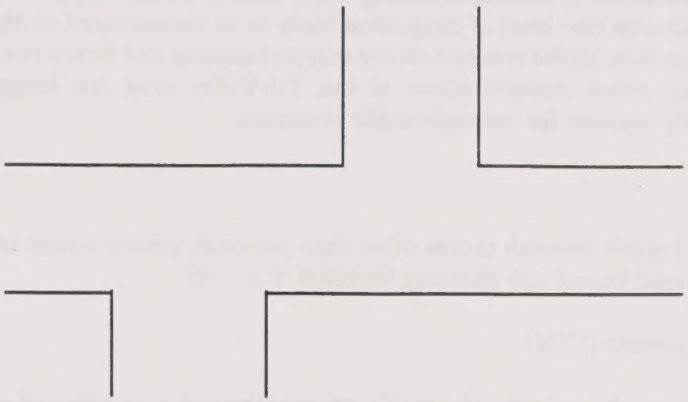
The word "shall" makes mandatory those policies with which it appears.

Special Rural Routes

Highways, major streets, and intracounty routes that pass through or by areas designated as having special rural features, which warrant incorporation of protection and enhancement measures in the roadway design. lands. These routes should incorporate special road design standards which serve to protect and complement the "wine country" character of these lands, including width restrictions, landscaping features, and special signage.

Staggered T Intersection

An intersection of major and/or collector streets in which one of the cross streets is offset and thus does not provide a direct and safe through-connection.



STAGGERED T INTERSECTION

Street Trees

Trees planted along roadways and in medians to enhance the visual qualities of roadway network.

Strip Commercial

Commercial development alongside a roadway which forms a long, narrow band of commercial land uses.

Terminal

A sheltered transit station, including public telephones and restrooms (e.g., Greyhound/Trailways downtown terminal).

Traffic Impact Funding

A process of paying for the costs of constructing new infrastructure and improvements to existing infrastructure necessitated by increased citywide usage of transportation facilities.

Traffic Model

A computerized traffic projection program or "gravity model" based on the existing roadway network, the Future Roadway Network map, related roadway improvement plans, and General Plan land use policies. Traffic generation (in and out) is computed based on existing and projected housing unit and employment totals. Housing unit and employment projections are based on the city's General Plan.

For the Livermore traffic model, existing and projected traffic generation data has been divided into 71 traffic zones within the Livermore planning area, and into numerous broader traffic zones representing urbanization trends in the Tri-Valley as a whole. Related traffic volumes are then distributed by the model to local minor streets, collector streets, major streets, highways, freeways, and intracounty routes based on a complex computer formula which determines which route the traffic from a particular zone will take to reach a particular destination. The computer-selected route for a particular route is determined by a combination of factors, including travel time and distance, and the speed and capacity of the various route choices (the level of congestion likely to be encountered on the route). The model then computes average daily traffic volumes on the mapped existing and future roadway system. Similar calculations for other urban concentrations in the Tri-Valley area are integrated into the local projections to properly account for through-traffic increases.

Transit

Travel of persons and goods through means other than personal, private motor vehicles; travel by bus, light rail (including rapid transit rail systems), or taxi.

Transportation Systems Management (TSM)

A strategy for reducing peak-hour vehicular traffic volumes through a coordinated program of alternative mode incentives (transit, van pools, bicycles, etc.), staggered working hours, and so on.

Tri-Valley

The subregional area in which Livermore is located, comprised of the Livermore-Amador Valley, San Ramon Valley, and Sycamore Valley. The area includes the Dougherty and Tassajara valleys; the cities of Livermore, Pleasanton, Dublin, San Ramon, and Danville, and surrounding unincorporated areas of Alameda and Contra Costa counties.

Truck Route

A path of travel for all vehicles exceeding set weight or axle limits; a truck route follows major arterials through commercial and industrial areas, avoiding sensitive residential areas.

Volume-to-Capacity Ratio (V/C Ratio)

A measure of roadway operation, based on the number of vehicles passing through a particular road segment divided by the theoretical maximum design capacity of the segment.

IV. APPENDICES

APPENDIX A. TYPICAL ROADWAY WIDTHS AND CAPACITIES

Functional Classification	No. of Lanes	Two-Way Daily Capacity (No. of Vehicles)
Local Street	2	10,000
Collector	2	20,000
	4 (no left-turn lanes)	25,000
Major Street	4 (divided)	30,000
	6 (divided)	45,000
Highway	4 (divided)	30,000
	6 (divided)	45,000
Freeway	8+ (divided)	55,000+

SOURCE: TJKM Transportation Consultants.

APPENDIX B. CREDITS

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LIVERMORE ROAD SYSTEM IMPROVEMENTS LIST

April 1989

RECOMMENDED ROAD SYSTEM IMPROVEMENTS

Note: Numbers and letters correspond to attached map.

The purpose of this list is to illustrate City priorities for future roadway improvements and is not part of the Circulation Element.

First Priority Improvements

Roadways

Isabel Parkway (40)	Widen to 4 lanes from I-580 to Las Positas Road (6 lanes ROW)
Isabel Parkway (41)	Extend 4 lanes from Las Positas to Stanley Blvd. (6 lanes ROW)
Isabel Parkway (42)	Rebuild Isabel Avenue to 2 lane State standards (6 lanes ROW)
Isabel Parkway (43)	Extend 2 lanes from Vineyard Ave. to Vallecitos Road (6 lanes ROW)
North Mines Road (8)	Extend southerly to East Avenue; 4 lanes (6 lanes ROW)
Concannon Boulevard (16)	Extend westerly from Altair Avenue to Isabel Parkway; 4 lanes.
Concannon Boulevard (18)	Extend from Arroyo Road to Livermore Avenue; 2 lanes (or 4 lanes through urban development.)
1st Street (6)	Widen to 6 lanes between Portola Avenue and I-580.
1st Street (7)	Widen to 4 lanes between South Livermore Avenue and Portola Avenue.
Vasco Road (10)	Widen to 4 lanes from Patterson Pass Road to East Avenue.
Vasco Road (29)	Widen to 4 lanes between I-580 and Scenic Avenue (6 lanes ROW)
Vasco Road (30)	Widen to 4 lanes between Scenic Avenue and North Canyons Parkway (6 lanes ROW)

Scenic Avenue (32)	Improve to 2 lanes with separate left-turn lanes between Vasco Road and Herman Avenue.
Scenic Avenue (33)	Extend from Herman Avenue to Northfront Road; 2 lanes with separate left-turn lanes.
Northfront Road (34)	Widen to 5 lanes (including a continuous median/turning lane) between Vasco Road and Greenville Road wherever there are commercial or residential frontages on both sides of the road.

Interchanges

I-580/Vasco Road (F)	Construct 8-lane overcrossing with added cloverleaf ramps in the northeast and southwest quadrants.
I-580/Isabel Parkway (B)	Construct 6-lane overcrossing with partial cloverleaf design (northeast and southwest quadrants).
I-580/1st Street (E)	Construct 6-lane overcrossing.
I-580/North Livermore Avenue (D)	Construct 6-lane underpass with partial cloverleaf design.

Grade-Separated Intersections

Isabel Parkway/UP and SP rights-of-way/ Stanley Boulevard (a)	Construct a grade separated facility at the intersection of Isabel Parkway extension with these two rail lines and Stanley Boulevard.
North Mines Road/ UP and SP rights-of-way (b)	Construct a grade-separated facility at the intersection of this road extension and the two rail lines.

Second Priority Improvements

Roadways

Isabel Parkway (40)	Widen to 6 lanes between I-580 and Las Positas Road.
Isabel Parkway (41)	Widen to 6 lanes between Las Positas Road and Stanley Blvd.

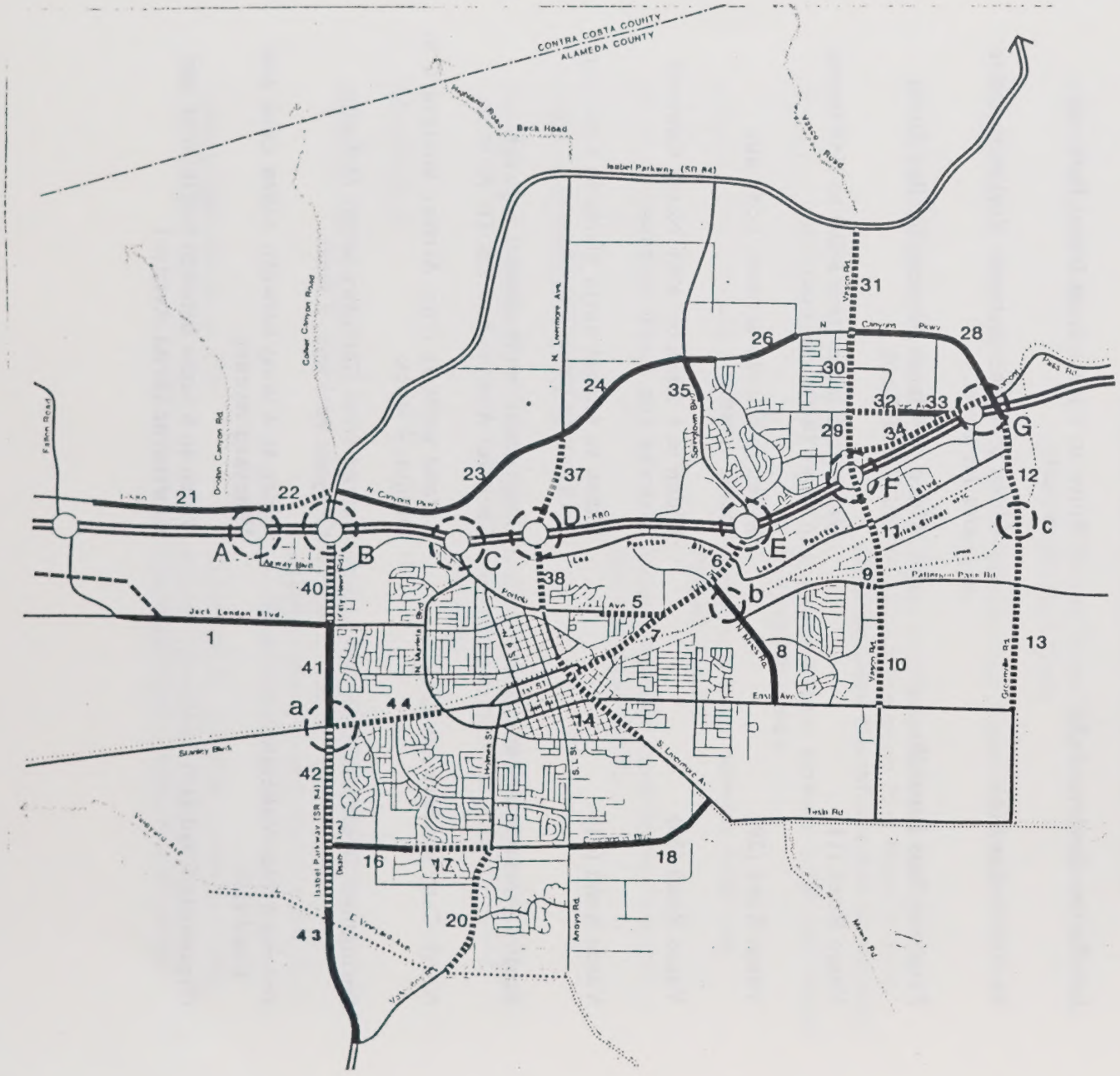
Isabel Parkway (42)	Widen to 6 lanes between Stanley Blvd. and Vineyard Ave.
Isabel Parkway (43)	Widen to 6 lanes between Vineyard Ave. and Vallecitos Road.
North Canyons Parkway (22)	Widen to 6 lanes between Collier Canyon Road and Airway Boulevard.
North Canyons Parkway (23)	Extend from Collier Canyon Road to North Livermore Avenue; 4 lanes.
North Canyons Parkway (24)	Extend from North Livermore Avenue to Springtown Boulevard; 2 lanes.
North Canyons Parkway (26)	Extend from Hartford Avenue to Dalton Road; 2 lanes.
North Canyons Parkway (28)	Extend from Vasco Road to I-580; 2 lanes.
Greenville Road (12)	Widen to 4 lanes between Northfront Road and Patterson Pass Road (6 lanes ROW between Northfront and Hawthorne)
North Livermore Avenue (37)	Widen to 4 lanes between I-580 and North Canyons Parkway.
North Livermore Avenue (38)	Widen to 6 lanes between I-580 and Portola Avenue.
Las Positas Road (1)	Extend westerly from Isabel Parkway; 2 lanes (6 lanes ROW).
<u>Grade Separated Intersections</u>	
Greenville Road/UP right-of-way(c)	Construct a grade-separated facility at the intersection of this road and the rail line.
<u>Interchanges</u>	
I-580/Portola Avenue (C)	Widen westbound onramp and eastbound offramp. (Note: Improvements will depend upon the location and design of the Isabel Parkway interchange.)
I-580/Greenville Road (G)	Construct 4- to 6-lane underpass with partial cloverleaf ramp design (northeast and southwest quadrants).

I-580/Airway Boulevard (A)	Construct 4-lane overcrossing with partial cloverleaf design (cloverleaf ramps in northeast and southwest quadrants). (Note: Improvements will depend upon the location and design of the Isabel Parkway interchange.)

Third Priority Improvements

Roadways

North Mines Road (8)	Widen to 6 lanes between 1st Street and East Avenue.
Las Positas Boulevard (1)	Widen to 6 lanes from Isabel Parkway westerly.
Portola Avenue (5)	Widen to 4 lanes between Yorkshire Drive and 1st Street.
Patterson Pass Road (9)	Widen to 4 lanes between Shelley Street and Vasco Road.
Vasco Road (11)	Widen to 6 lanes from I-580 to Hawthorne Avenue (Brisa Avenue).
Vasco Road (29)	Widen to 6 lanes between I-580 and Scenic Avenue.
Vasco Road (30)	Widen to 6 lanes between North Canyons Parkway and Scenic Avenue.
Vasco Road (31)	Widen to 4 lanes north of North Canyons Parkway to Isabel Parkway.
South Livermore Avenue (14)	Operational improvements between Chestnut Avenue and Pacific Avenue.
North Canyons Parkway (21)	Extend westerly from Airway Boulevard to Dublin; 4 lanes.
Springtown Boulevard (35)	Extend from Galloway Street to North Canyons Parkway; 2 lanes.
Holmes Street-Vallecitos Road (20)	Widen to 4 lanes between Alden Lane and Vineyard Avenue.
Greenville Road (12)	Widen to 6 lanes between Northfront and Hawthorne (Brisa Avenue)



EXTENSION

WIDENING

NUMBERS AND LETTERS CORRESPOND TO THE RECOMMENDED ROAD SYSTEM IMPROVEMENTS LIST

RECOMMENDED ROAD SYSTEM IMPROVEMENTS

1/2 0 1 miles

CIRCULATION ELEMENT
CITY OF LIVERMORE GENERAL PLAN

U.C. BERKELEY LIBRARIES
C101697645